



Contract No. DACW29-97-D-0018
Delivery Order 0025

**PHASE I CULTURAL RESOURCES SURVEY AND
ARCHEOLOGICAL INVENTORY OF THE PROPOSED
SCHOONER BAYOU PROJECT CORRIDOR IN
VERMILION PARISH, LOUISIANA**

**FINAL REPORT
AUGUST 2001**

PREPARED FOR:

**U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, Louisiana 70160-0267**

UNCLASSIFIED: DISTRIBUTION IS UNLIMITED

**R. CHRISTOPHER GOODWIN & ASSOCIATES, INC.
309 JEFFERSON HIGHWAY, NEW ORLEANS, LA 70121**

20011105 037

REPORT DOCUMENTATION PAGE

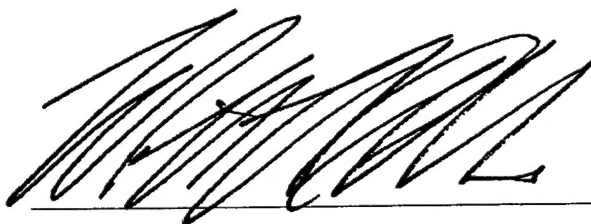
Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204 Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE August 2001	3. REPORT TYPE AND DATES COVERED Final Report -- January 2000	
4. TITLE AND SUBTITLE Phase I Cultural Resources and Archeological Inventory of the Proposed Schooner Bayou Project Corridor in Vermilion Parish, Louisiana			5. FUNDING NUMBERS	
6. AUTHORS Catherine Labadia, Kari Krause, Jeremy Pincoske, Colleen Hanratty, and William P. Athens				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) R. Christopher Goodwin & Associates, Inc. 5824 Plaque Street New Orleans, LA 70123			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Corps of Engineers, New Orleans District P.O. Box 60267 New Orleans, LA 70160-0267			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Unclassified/Unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) <p>This report presents the results of Phase I cultural resources survey and archeological inventory of the proposed Schooner Bayou Bankline Stabilization Project corridor in Vermilion Parish, Louisiana. Fieldwork for this project was completed during January of 2000 on behalf of the U.S. Army Corps of Engineers, New Orleans District, by R. Christopher Goodwin & Associates, Inc., pursuant to Contract DACW29-97-D-0018, Delivery Order 25. The proposed project involves the construction of a rock dike along the left-descending bank of the North Prong of Schooner Bayou to prevent erosion. The current document contains the results of a detailed examination of the proposed Area of Potential Effect, which encompassed an area that totaled approximately 6.3 ha (15.5 ac) in extent and measured 2.1 km (1.3 mi) in length and 30 m (98.4 ft) in width.</p> <p>As a result of this investigation, the entire Area of Potential Effect (APE) was subjected to both pedestrian survey and systematic subsurface testing. This project was undertaken in accordance with the procedures outlined in the National Historic Preservation Act of 1966, as amended; the Archaeological and Historic Preservation Act of 1974; the Archaeological Resources Protection Act of 1979, as amended; and Title 36 of the Code of Federal Regulations, Parts 60-66 and 800, as appropriate. Survey and excavation efforts abided by all pertinent state guidelines and included issues addressed in <i>Louisiana's Comprehensive Archeological Plan</i> (Smith et. al. 1983).</p> <p>Despite this intensive field effort, no evidence of intact cultural deposits was observed and no cultural material was recovered during survey of the project corridor. In addition, no historic period standing structures were identified within, or immediately adjacent to, the proposed Area of Potential Effect. No additional testing of the proposed Schooner Bayou Bankline Stabilization corridor is recommended.</p>				
14. SUBJECT TERMS Schooner Bayou Vermilion Parish Terrestrial Survey			15. NUMBER OF PAGES 72	
			PRICE CODE	
16. SECURITY CLASSIFICATION OF REPORT Unclassified	17. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	18. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	19. LIMITATION OF ABSTRACT SAR	

**PHASE I CULTURAL RESOURCES SURVEY AND ARCHEOLOGICAL
INVENTORY OF THE PROPOSED SCHOONER BAYOU PROJECT
CORRIDOR IN VERMILION PARISH, LOUISIANA**

Final Report

A large, stylized handwritten signature in black ink, appearing to read 'W. P. Athens', is written over a horizontal line.

**William P. Athens, M.A., A.B.D.
Principal Investigator**

By

**Catherine Labadia, Kari Krause, Jeremy Pincoske,
Colleen Hanratty, and William P. Athens**

**R. Christopher Goodwin & Associates, Inc.
5824 Plaque Street
New Orleans, LA 70123**

August 2001

For

**U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267**

TABLE OF CONTENTS

REPORT DOCUMENTATION PAGE	i
TITLE PAGE.....	ii
LIST OF FIGURES	vi
LIST OF TABLES	viii
I. INTRODUCTION	1
Project Description	1
Project Design and Field Methods	1
Project Results and Recommendations	3
Project Personnel	3
Organization of the Report.....	3
II. NATURAL SETTING	4
Introduction.....	4
Regional Geomorphology.....	4
Holocene Age Delta Complexes	6
Teche Delta Complex.....	6
St. Mary Coastal Region.....	8
Effects on Archeological Deposits	9
Soils	9
Flora and Fauna	10
Saline Marsh.....	11
Brackish Marsh.....	14
Fresh Marsh.....	14
Natural Levees.....	15
Swamps	16
Climate.....	16
III. PREHISTORIC CULTURAL SEQUENCE	19
Introduction.....	19
Paleo-Indian Stage (ca. 12,000 - 8000 B.P. [10,050 - 6050 B.C.].....	19
Archaic Stage (ca. 8000 - 3500 B.P. [6050 - 1550 B.C.]	20
Early Archaic Period	20
Middle Archaic Period	20

Late Archaic Period.....	21
Poverty Point Culture (ca. 4000 - 2500 B.P. [2050 - 550 B.C.]).....	21
Woodland Stage (ca. 2450 - 750 B.P. [500 B.C.- A.D. 1200]).....	22
Tchefuncte Culture (ca. 2450 - 1949 B.P. [500 B.C. - A.D. 1]).....	22
Marksville Culture (ca. 1949 - 1550 B.P. [A.D. 1 - 400]).....	22
Troyville-Coles Creek Period (ca. 1550 - 750 B.P. [A.D. 400 - 1200]).....	23
Mississippian Stage (ca. 750 - 300 B.P. [A.D. 1200 - 1700]).....	24
Emergent Mississippian Period (ca. 750 - 500 B.P. [A.D. 1200 - 1450]).....	24
Late Mississippian Period (ca. 500 - 250 B.P. [A.D. 1450 - 1700]).....	24
Protohistoric and Early Historic Period (ca. 411 - 220 B.P. [A.D. 1539 - 1730]).....	25
IV. HISTORIC OVERVIEW.....	27
Introduction.....	27
The Colonial Period.....	28
French Colonial Period.....	28
Spanish Colonial Period.....	28
The Acadians.....	29
Land Claims within Vermilion Parish.....	32
Territorial and Antebellum Eras.....	33
Development of Sugar Plantations.....	35
The Civil War Era.....	36
Postbellum Era.....	38
The Twentieth Century.....	40
Wildlife Refuge in Vermilion Parish.....	42
Discussion.....	43
V. PREVIOUS INVESTIGATIONS.....	44
Introduction.....	44
Previously Conducted Cultural Resources Investigations within 8 km (5 mi) of the Currently Proposed Schooner Bayou Project Item.....	44
Vermilion Parish.....	45
Multiple Parishes.....	45
Previously Recorded Archeological Sites Located within 1.6 km (1 mi) of the Currently Proposed Schooner Bayou Project Area.....	45
Previously Recorded Standing Structures Located within 1.6 km (1 mi) of the Currently Proposed Schooner Bayou Project Area.....	46
Previously Recorded Shipwrecks Located within 1.6 km (1 mi) of the Currently Proposed Schooner Bayou Project Area.....	46

VI. FIELD METHODOLOGY	47
Introduction.....	47
Project Description	47
Research Design	47
Field Methodology.....	49
Shovel Testing.....	49
Auger Testing.....	49
Architectural Review and Standing Structures Recordation	49
Curation	50
VII. RESULTS OF THE FIELD INVESTIGATIONS.....	51
Introduction.....	51
Survey Segments.....	51
Segment 1	51
Segment 2	52
Segment 3	53
Summary and Management Recommendations.....	54
VIII. SUMMARY AND MANAGEMENT RECOMMENDATIONS.....	55
BIBLIOGRAPHY	56

LIST OF FIGURES

Figure 1.	Map of Louisiana depicting the location of the proposed Schooner Bayou Bankline Stabilization Project Area in Vermilion Parish, Louisiana	1
Figure 2.	Excerpt from the 1979 Forked Island, LA digital 7.5' series topographic quadrangle, depicting the proposed Schooner Bayou Bankline Stabilization Project corridor.....	2
Figure 3.	Delta lobes formed by the Mississippi River in the past 6,000 years. From Frazier (1967).....	5
Figure 4.	Development of delta sequences. From Frazier and Osanik (1965)	5
Figure 5.	Hypothetical sedimentary sequence resulting from several overlapping deltaic cycles showing environments of deposition. From Coleman and Gagliano (1964).....	6
Figure 6.	Fluvial and marine features of southwestern Louisiana. Lafayette Meander Belt is marked by the complex of Mississippi River abandoned channels trending from Lafayette southwestward toward White Lake. From Saucier (1977).....	7
Figure 7.	Physiographic features of a portion of coastal Louisiana. From Frazier and Osanik (1965)	8
Figure 8.	Excerpt from F. Lucas' Rendition of Darby's Map (1817), Showing the Attakapas Region. Louisiana Collection, Tulane University	26
Figure 9.	Areas of Acadian Settlement. Carl A. Brasseaux (1987) From "The Founding of New Acadia", LSU Press.....	28
Figure 10.	Manuscript Map of Calhoun Flunker, Surveyor General (1890), Showing Extracts from Township Maps of Vermilion, St. Mary, St. Martin, and Iberia Parishes. This Excerpt Shows the Claims of Mouton, Etier, and Delahoussaye Along the Vermilion River. Louisiana Collection, Tulane University.....	31
Figure 11.	Ions of the Original Attakapas County, or St. Martin Parish, 1805-1868, Derived from St. Martin Development Board ca. 1850	32
Figure 12.	Illustration of the Battle of Vermilion Bayou Depicting the Location of Pinhook Bridge. From the Journal of Louisiana History II P320: "Military Events in Louisiana During the Civil War 1861-1865" By Allen W. Jones (1961)	37

Figure 13.	Excerpt from the 1979 Forked Island, LA digital 7.5' series topographic quadrangle, depicting the entire study area, previously recorded archeological sites and standing structures	46
Figure 14.	An overview of Segment 1 facing northeast	51
Figure 15.	Typical soil profiles for floodplain (a) and natural level landforms (b) within Segment 1	52
Figure 16.	An overview of Segment 2 facing northeast	52
Figure 17.	Typical soil profiles for floodplain (a) and natural level landforms (b) within Segment 2	53
Figure 18.	An overview of Segment 3 facing east	53
Figure 19.	Typical soil profiles for floodplain (a) and natural level landforms (b) within Segment 3	54

LIST OF TABLES

Table 1.	Plant Taxa of Marshes within Proposed Project Area	11
Table 2.	Crustaceans and Shellfish Present in the Proposed Project Area	12
Table 3.	Fish Present in Vermilion Parish.	13
Table 4.	Mammals Present in Vermilion Parish	14
Table 5.	Birds Present in the Marshes of the Proposed Project Area	15
Table 6.	Reptiles and Amphibians Present in the Proposed Project Area	15
Table 7.	Plant Taxa of Swamps and Levees in Vermilion Parish.....	16
Table 8.	Birds Present in Vermilion Parish	17
Table 9.	Cultural Resources Investigations Completed within 8 km (5 mi) of the Currently Proposed Schooner Bayou Project Item	42

CHAPTER I

INTRODUCTION

This document presents the results of Phase I cultural resources survey and archeological inventory of the proposed Schooner Bayou project corridor in Vermilion Parish, Louisiana (Figure 1). This investigation was completed on behalf of the U.S. Army Corps of Engineers, New Orleans District, by R. Christopher Goodwin & Associates, Inc., in January of 2000 pursuant to Contract DACW29-97-D-0018. All fieldwork was performed in accordance with the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969, as amended; and *Louisiana's Comprehensive Archaeological Plan* (Smith et al. 1983); and the Scope of Work drafted by the U.S. Army Corps of Engineers, New Orleans District.

Project Description

The U.S. Army Corps of Engineers, New Orleans District, plans to stabilize approximately 1.6 km (1 mi) of bankline in the vicinity of the Schooner Bayou Control Structure, located on the Mermentau River, Louisiana. This undertaking entails construction of a rock dike in the shallow waters adjacent to the left-descending bank of the North Prong of Schooner Bayou to prevent erosion. The dike, as currently designed, consists of crushed and armor stone, and it measures approximately 10.7 m (35 ft) in width at its base.

The proposed Area of Potential Effect is situated in an area characterized by open marsh; the area currently is not populated. No standing structures are depicted within or in the vicinity of the proposed project area, on the 1979 U.S. Geological Survey 7.5' Series Forked Island, Louisiana topographic quadrangle (Figure 2). In addition,

this area is frequently flooded by levee seepage during periods of high water.

Project Design and Field Methods

This Phase I cultural resources survey and archeological inventory was designed to identify, record, and evaluate all cultural resources (archeological sites, cultural resources loci, standing structures, cemeteries, and traditional cultural properties) situated within or adjacent to

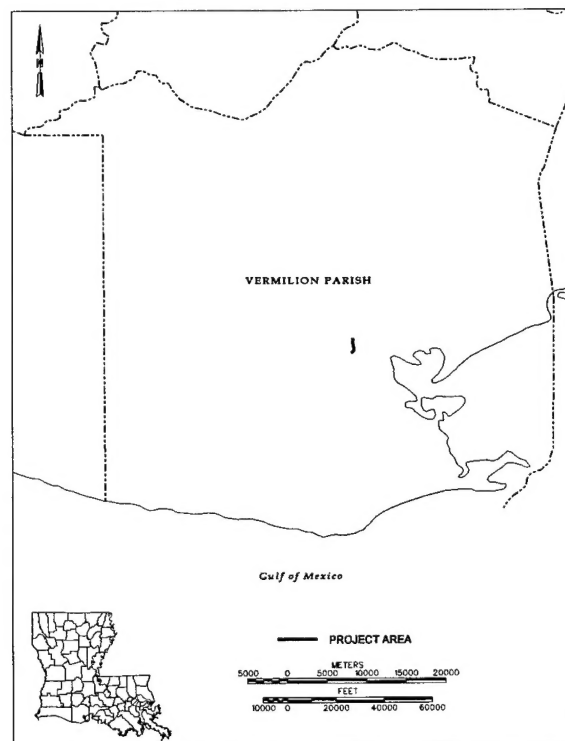


Figure 1. Map of Louisiana depicting the location of the proposed Schooner Bayou Bankline Stabilization Project Area in Vermilion Parish, Louisiana.

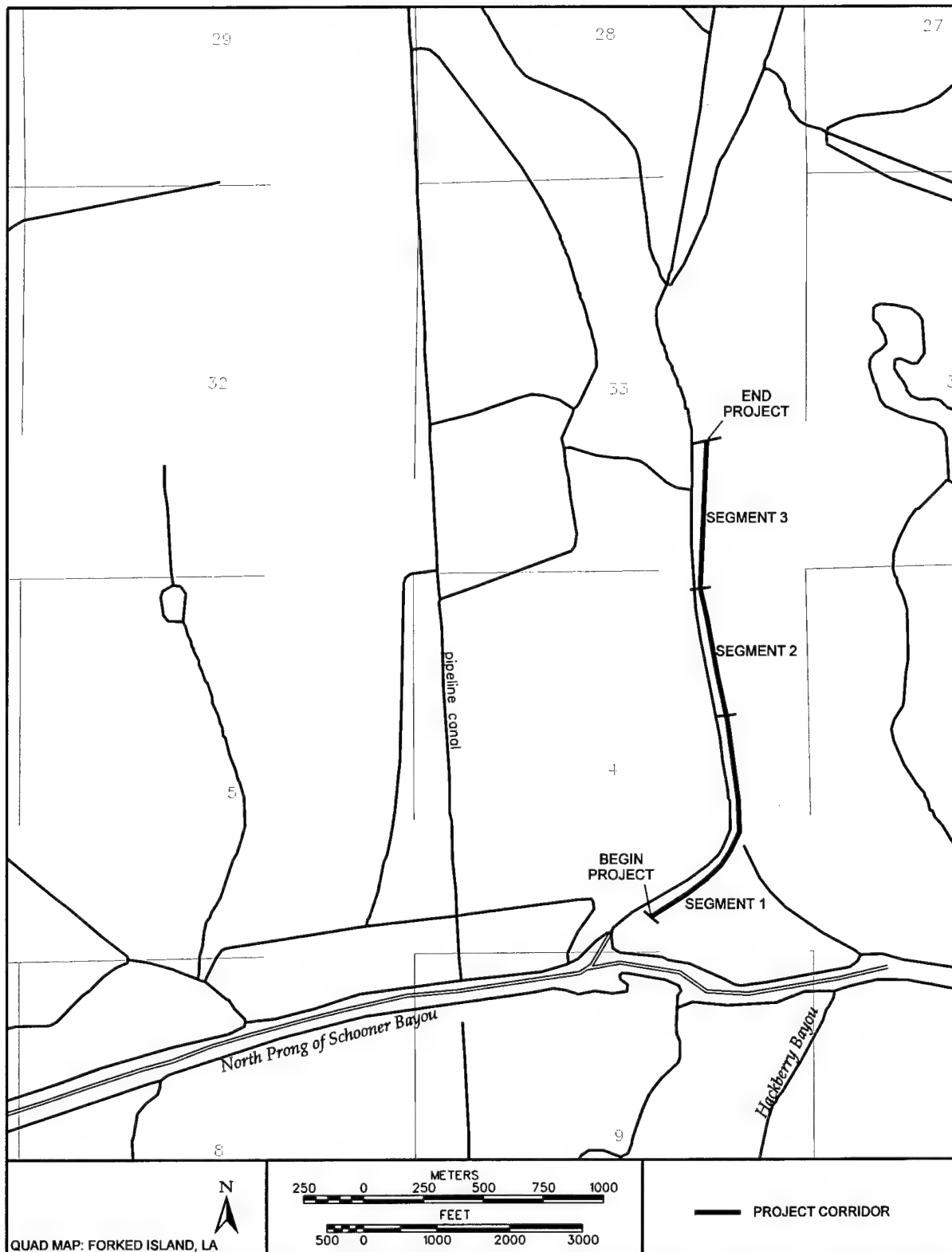


Figure 2. Excerpt from the 1979 Forked Island, LA digital 7.5' series topographic quadrangle, depicting the proposed Schooner Bayou Bankline Stabilization Project corridor.

the proposed Area of Potential Effect associated with the Schooner Bayou Bankline Stabilization Project that may be impacted adversely as a result of this undertaking. To accomplish this goal, the entire length and width of the proposed project corridor was surveyed for cultural resources. This included intensive boat/pedestrian reconnaissance augmented by systematic subsurface testing throughout the proposed Areas of Potential Effect. A multi-staged approach was utilized to complete this investigation. It consisted of cartographic, archival, and archeological review of data relevant to the proposed project corridor; followed by boat/pedestrian survey and systematic shovel and auger testing within the Areas of Potential Effect. The survey corridor measured approximately 2.1 km (1.3 mi) in length and 30 m (98.4 ft) in width; it totaled approximately 6.3 ha (15.5 ac) (Figure 2). Fieldwork also included an architectural survey to identify and record any standing structures older than 50 years in age situated within or in the vicinity of the limits of the proposed project corridor.

Project Results and Recommendations

Despite the implementation of intensive visual reconnaissance augmented by systematic shovel and auger testing throughout the Areas of Potential Effect, no cultural resources were identified within this moderate to low probability corridor. In addition, no historic period standing structures, i.e., those structures 50 years in age or older, were identified during survey. In summary, no significant or potentially significant cultural resources were identified within the lim-

its of the proposed project corridor. No additional testing of the Schooner Bayou project corridor is recommended.

Project Personnel

Mr. William P. Athens, M.A., served as the Principal Investigator for this project. Ms. Catherine M. Labadia, M.A., acted as Project Manager. Ms. Susan Barrett Smith, B.A., coordinated the historic research for this project; she was assisted by Ms. Colleen Hanratty. Ms. Kari Krause, M.S., served as Assistant Project Manager and she directed most aspects of the fieldwork; she was assisted by Ms. Rebecca Johnson, B.A., and Ms. Stephanie Clayton, B.A.

Organization of the Report

The natural setting of the proposed project items is presented in Chapter II. It includes a brief overview of the geomorphology, soils, flora, fauna, and climate of the region. The prehistory of the study area is outlined in Chapter III and the history of the proposed project items is chronicled in Chapter IV. A review of all previously recorded sites, previously recorded standing structures, and previously completed cultural resources surveys located in the immediate vicinity of the three proposed project items is contained in Chapter V. The field methods used to complete this investigation are discussed in Chapter VI. Finally, the results of this investigation are described in Chapter VII and a summary and management recommendations are presented in Chapter VIII.

CHAPTER II

NATURAL SETTING

Introduction

The Schooner Bayou Bankline Stabilization Project area is located on North Prong in southeastern Vermilion Parish, Louisiana. Elevations throughout the area are at or slightly above sea level and the entire project area exhibits very little vertical relief. North Prong is a small tributary that connects Schooner Bayou to the south and the Intracoastal Waterway to the north. In addition, it is associated with the drainage of three interconnected bays, i.e., Vermilion, West Cote Blanche, and East Cote Blanche Bays. The nearest town of any size, Forked Island, Louisiana, is located approximately 8 km (5 mi) to the northwest of the project corridor.

The distribution of human habitation across the landscape is influenced in large part by the environment and the usable resources found within it. The area encompassing the Area of Potential Effect is characterized by a number of different, exploitable ecosystems. This chapter identifies those processes that characterized the development of the project corridor and influenced the settlement and subsistence strategies characteristic of the prehistoric and historic populations of the area. While a close consideration of the natural setting should aid in predictive modeling, it is important to note that this approach only helps to identify trends, and it cannot serve completely as a substitute for initiating a Phase I cultural resources survey or archeological inventory.

Regional Geomorphology

The proposed Schooner Bayou project item is located within the general physiographic region of the West Gulf Coastal Plain section of the Gulf and Atlantic Coastal Plain province of

North America (Murray 1961). More specifically, the proposed project area lies within a belt of Pleistocene coastwise terraces that stretch along the Gulf Coast. It is situated within the Chenier deltaic plain section, west of the Atchafalaya Basin portion of the Lower Mississippi Valley and south of the Red River Deltaic Plain (Figure 3). The current study area falls within the Teche Delta Complex, which served as the major distributary for the Mississippi River between 5800 and 3900 B.P.

To understand the delta cycles, the sedimentary architecture of complexes and lobes, and the nature and distribution of depositional environments, it is necessary to recognize the prevailing influence of subsidence and sea level rise, especially during the waning of the last major continental glaciation and the resulting Holocene sea level transgression (Figures 4 and 5). The five basic factors involved in subsidence are true or actual sea level rise, sinking of the basement rocks due to crustal processes, consolidation of the thick sedimentary sequence in the Gulf Basin, local consolidation of near-surface deposits due to desiccation and compaction, and tectonic activity. The relative roles of each of these factors are discussed at length by Kolb and VanLopik (1958) and they are not repeated herein; instead attention is focused on the net result of these processes and their effect on the deposits and landforms encompassed by the project area.

Sea level rise was an integral factor in the deltaic cycles of progradation and transgression. Penland et al. (1991) documents evidence indicating that the *rate* of sea level rise between 3,000 and 7,000 years ago was not steady within

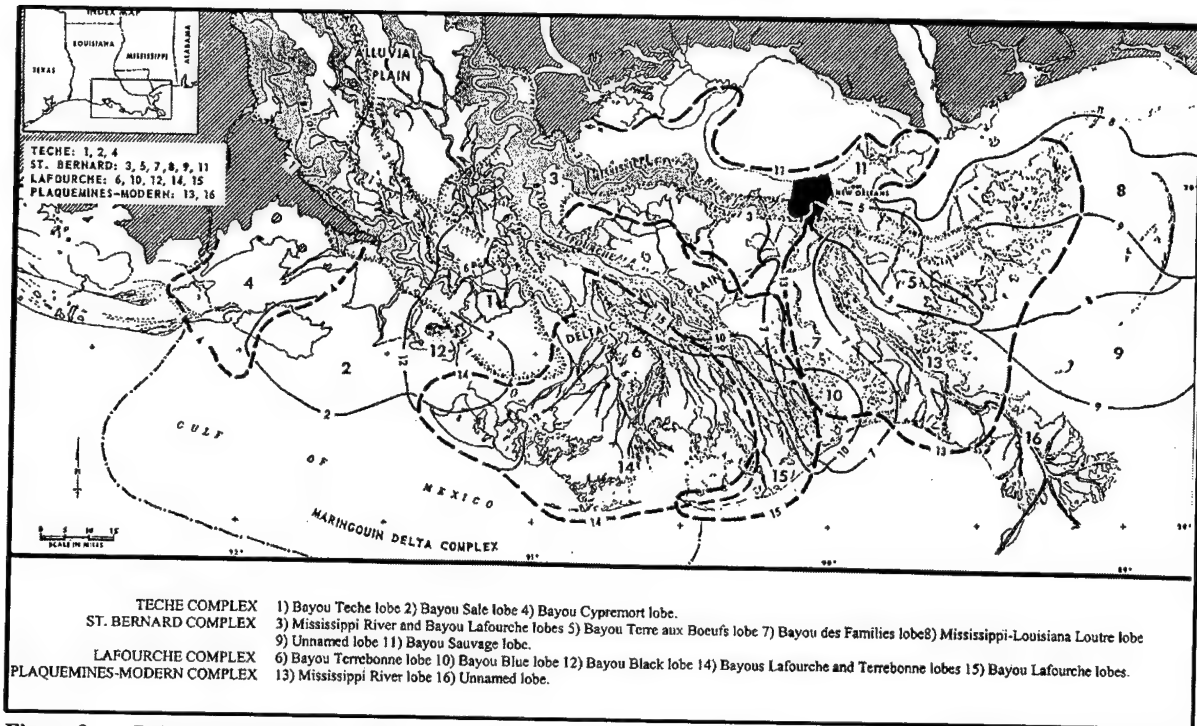


Figure 3. Delta lobes formed by the Mississippi River in the past 6,000 years. From Frazier (1967).

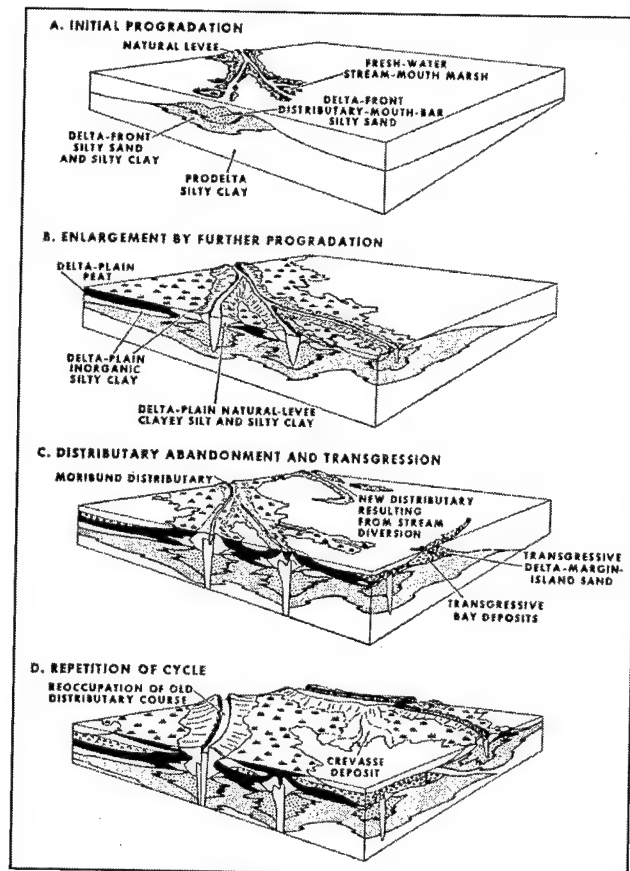


Figure 4. Development of delta sequences. From Frazier and Osanik (1965).

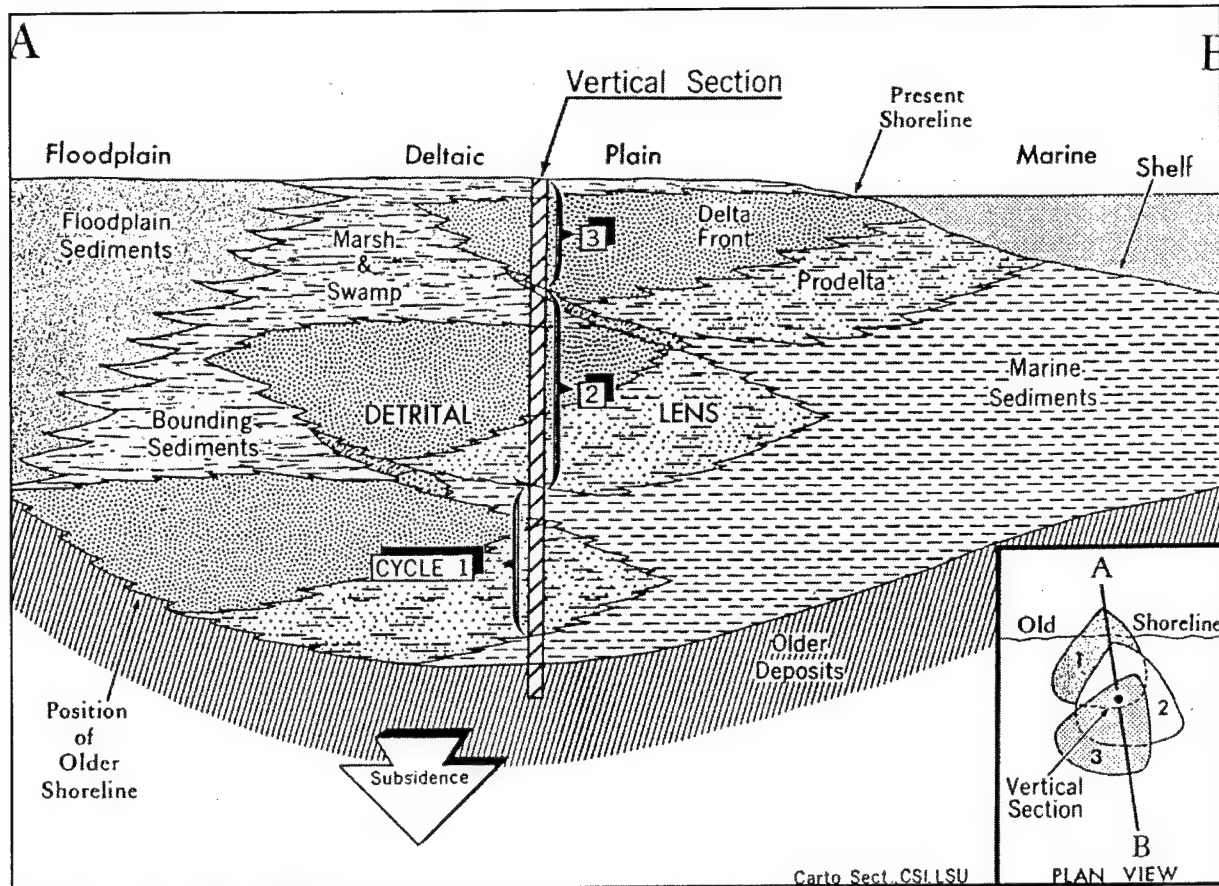


Figure 5. Hypothetical sedimentary sequence resulting from several overlapping deltaic cycles showing environments of deposition. From Coleman and Gagliano (1964).

the Gulf Coastal area or elsewhere in the world. Rather, there were periods of at least several centuries when sea level was essentially constant, separated by periods of comparable length during which the rate of rise may have been greater than 200 cm (68 in) per century. The alternating periods were an integral part of the last major continental glaciation and the resulting Holocene sea level transgression.

Holocene Age Delta Complexes

The Pleistocene Epoch, which began approximately 1.2 to 2 Ma (million years ago), encompasses a number of stages defined by their correlation with glacial events. During a glacial retreat, a huge amount of unconsolidated sediments were subject to erosion and a great deal of the sediments generated throughout North America by these glacial events have been transported through the Mississippi River drain-

age system, and deposited in Louisiana and into the Gulf of Mexico. The oldest sedimentary depositions occurred during the Sangamonian stage, approximately 130,000 - 125,000 B.P., with further deposition occurring during the glacial retreat of the Middle Wisconsin stage, approximately 30,000 - 65,000 B.P. The Holocene Epoch (ca. 18,000 B.P. - present) also experienced periods of sediment deposition; of which the Teche Delta Complex will be discussed (Saucier 1994).

Teche Delta Complex

Around 5800 B.P., the development of the Teche Delta Complex began after rising sea levels had submerged most of the Maringouin Delta Complex. Between 5800 - 3900 years B.P., the Mississippi River formed the Teche Delta Complex by building over the intact Maringouin Delta Complex delta plain (Figure 3). East of the Pen-

chant Shoreline, the Teche Delta Complex prograded into open water over what had formerly been the Maringouin Delta Complex. The specific sequence in which the delta lobes developed, however, remains controversial (Smith et al. 1986:61-64; Weinstein and Kelley 1989:33-34; Weinstein and Gagliano 1985:123).

The eastern limit of progradation for the Teche Delta Complex also is a subject of debate. Smith et al. (1986:61-62) place the easternmost limit of this delta complex near Houma, Louisiana. In contrast, Weinstein and Gagliano (1985:123) argue that the eastern margin of the Teche Delta Complex lies 48.3 km (30 mi) east of Houma. They claim that southwest trending distributaries in the Terrebonne Delta Plain, such as Bayou Du Large and Mauvais Bois, are Teche distributaries that were reoccupied by the Lafourche Delta Complex (Weinstein and Kelley 1989:33).

During its existence, drastic changes occurred within the river courses that fed the Teche Delta Complex. First, the Mississippi River switched from Saucier's (1981:16) Meander Belt No. 4 to Meander Belt No. 3. For the first thou-

sand years, Meander Belt No. 4 supplied sediment to the Teche Delta, until it was abandoned for Meander Belt No. 3 (Autin et al. 1991). Second, an abrupt aggradation of Meander Belt No. 3 caused it to abandon and bury an older meander belt, and to form the relict river course currently occupied by Bayous Teche and Black. Finally, the Red River occupied this river course as the flow of the Mississippi River gradually shifted to the east into Meander Belt No. 2 about 3900 years B.P. As a result, the Teche Delta Complex remained active as the Red River partially discharged its flow directly into the Gulf of Mexico (Figure 6) (Goodwin et al. 1990).

The Teche Delta Complex consists of alternating beds of peat and deltaic sediments caused by the periodic deltaic deposition of sediments by both the Teche and Maringouin delta complexes, and by the accumulation of peats within the interdistributary bays. During periods of inactivity when the delta plain was covered by marsh, a blanket of peat accumulated across the subsiding delta plain (Coleman 1966). The time at which the Red River abandoned both its Bayou Teche course and the Teche Delta Complex has yet to

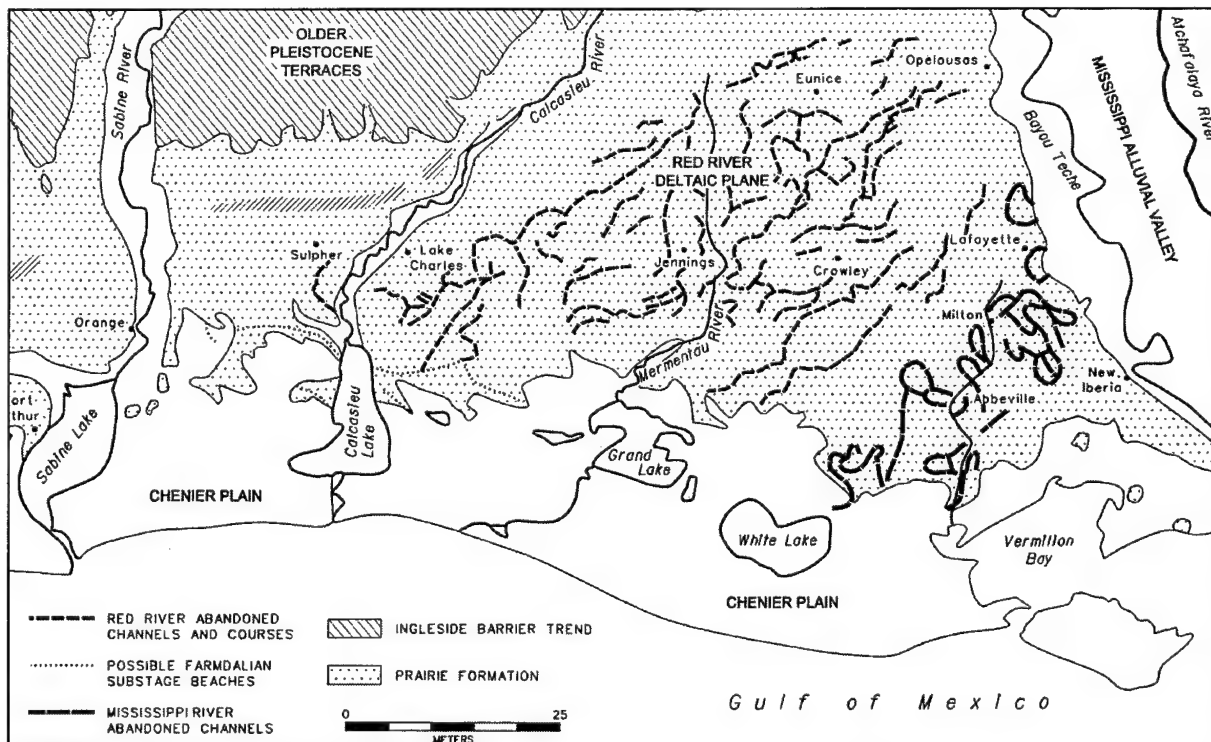


Figure 6. Fluvial and marine features of southwestern Louisiana. Lafayette Meander Belt is marked by the complex of Mississippi River abandoned channels trending from Lafayette southwestward toward White Lake. From Saucier (1977).

be determined satisfactorily. Autin et al. (1991) suggest that it occurred about 2500 B.P. Pearson (1986) and Weinstein and Kelley (1989:33-34) both argue, on the basis of archeological data, that it occurred about 1800 - 1900 B.P. With the abandonment of this delta, the area began to subside.

St. Mary Coastal Region

Based upon modern physiography, the current project area lies within the St. Mary Coastal Region of the Mississippi Deltaic Plain (Figure 7). The region acts as the subarial portion of the partially submerged delta plain of the Teche Delta Complex. Adjacent to the Prairie Terrace, the St. Mary Coastal Region delta plain consists of a narrow strip of delta plain that is covered almost entirely by freshwater marsh. Brackish-water marsh and a narrow band of salt water marsh, situated along the coastline, covers the rest of this region (Coleman 1966).

The coastline is characterized by deep embayments of the Vermilion and Cote Blanche bays. These bays are defined by passes formed by prominent points of land that protrude into the

water between the coast and Marsh Island. These prominent points of land, Point Chevreul and Point Cypremort, are formed by the natural levees of Bayou Sale and Bayou Cypremort, respectively. Both bayous represent feeder channels of different deltas of the Teche Delta Complex. At each point, shoreline erosion is actively destroying the natural levees and the archeological sites associated with them (Coleman 1966).

Within the St. Mary Coastal Region, the diapiric movement of salt formed five "islands", i.e., Weeks, Jefferson, Cote Blanche, Belle Isle, and Avery, within the marshes with over 10 m (3.2 ft) of relief within an otherwise flat deltaic plain. These islands represent landforms that were attractive especially for both prehistoric and historic period habitation because they not only provided elevated, stable terrain, but also access to floral, faunal, and lithic resources, and, in some instances, saline springs not found elsewhere within the marshes and distributaries of southern Louisiana. The islands generally consist of highly dissected loess-covered hills that have been cored by uplifted Quaternary fluvial sediments (Autin 1984).

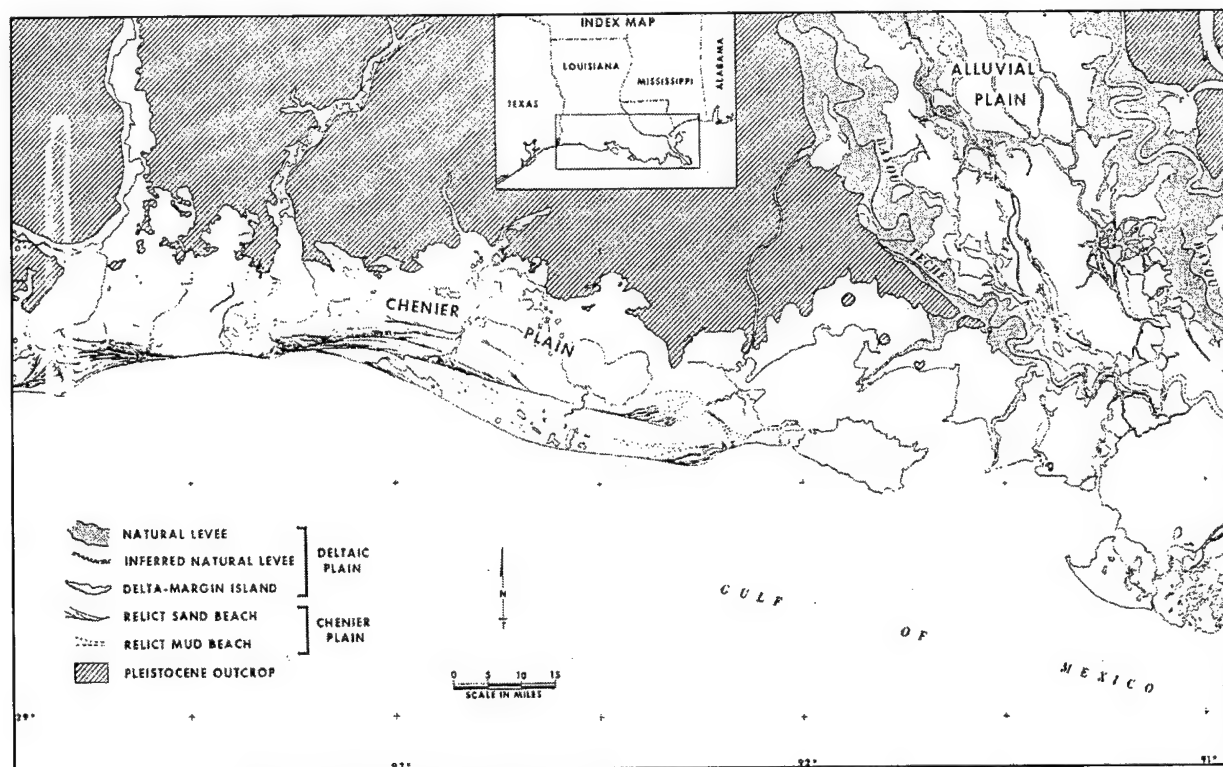


Figure 7. Physiographic features of a portion of coastal Louisiana. From Frazier and Osanik (1965).

Effects on Archeological Deposits

The Teche Delta Complex no longer is active; however, it was active and prograding for several thousand years at which time archeological deposits could have formed and been affected. While a delta is actively building seaward, two processes, vertical accretion and channel widening, have a profound affect on the surface and subsurface distribution of archeological deposits. These processes result either in the preservation, burial, or destruction of the associated archeological deposits.

Once a delta complex in this area is abandoned, it subsides into the Gulf of Mexico. The result of the subsidence is the landward movement of the shoreline, i.e., a "transgression," over the delta plain. During a transgression, three processes serve to destroy the delta plain and the natural and archeological deposits that form it (Figure 4). Both shoreface erosion and tidal channel migration, erode the shoreline of the delta plain. Landward of this shoreline, the enlargement of the lakes and interdistributary bays of the delta that occurs in response to relative sea level rise destroys the delta plain and the aggradation of sediments that comprise it, actively destroying the natural levees and the archeological sites associated with them.

Within southern Louisiana, historic uses of the Mississippi River meander belts and crevasses have impacted severely the archeological deposits that lie within them. Agricultural, urban, and industrial development has disturbed extensive portions of the natural levees and the point bars within the meander belts of the Mississippi River. Construction of artificial levees for flood control has led to the destruction of archeological sites along the entire length of the modern course of the Mississippi River. Dredging also impacts the integrity and visibility of archeological deposits. It has been suggested that the dumping of spoil has buried and concealed the archeological deposits found along the banks of rivers and bayous throughout the south Louisiana area.

In addition, the constant use of these waterways by recreational or commercial traffic creates substantial wave action from the wakes of this riverborne traffic. The constant wave action generated from river/bayou traffic, as well as wind and current action, cause extensive erosion of the unprotected banks of water courses. A brief ex-

amination of the Louisiana Division of Archaeology files demonstrates that bank erosion represents an extremely serious threat to archeological deposits throughout the region.

The processes that either construct or destroy a delta complex inevitably bias the archeological record either through the destruction or burial of archeological deposits. The archeological deposits that occur as surficial sites represent an extremely biased sampling of the original settlement pattern. As a result, there will be significant differences between the distribution of sites recorded for any specific cultural group, and the original settlement pattern associated with that group.

Many of the processes that erode and rework the delta plain affect the aggradational facies with which archeological deposits are associated the most. As a result, when a piece of the delta plain is lost to coastal erosion or subsidence, the archeological deposits associated with that piece of the delta plain usually are devastated. Currently, bankline erosion along the waterways of Louisiana is destroying and damaging many archeological deposits.

Most of the current study area has subsided to some extent following the natural progression of the abandonment of a major delta lobe, the Teche Delta, and its lack of replenishing sedimentary deposits. As a result, portions of the current study area that today are fresh water estuaries, marshes and swamps, in fact, are subsided distributaries, levees, and interdistributary basins of former freshwater environments. Subsidence of these landforms, and the archeological sites situated on them, would be relatively gentle, and the natural accretion of organic sediments would cover and preserve most sites (Gagliano 1984:28). The freshwater environments surrounding these former terrestrial landforms would have been capable of supporting a wide variety of flora and fauna, as well as human habitation. Therefore, there is a very high probability that areas within the immediate vicinity of the current study area contain both terrestrial and now subaqueous cultural remains.

Soils

A review of the soil survey from Vermilion Parish, identified the Allemands-Larose soil association as encompassing the proposed project

area (Murphy and Libersat 1996). The Allemands-Larose Association is comprised of level, very poorly drained soils that have a peaty or clayey surface layer and mucky and clayey underlying material. Found in freshwater marshes, this association makes up about 21 percent of the parish. These soils are ponded most of the time and they are flooded frequently. In addition, they are well suited as habitat for wetland wildlife or for extensive recreational purposes.

Allemands mucky peat typically has a 122 cm (48 in) layer of dark brown to black very fluid organic material. It is underlain by 30 cm (12 in) of black, very fluid mucky clay, followed by another 2 m (6.6 ft) of gray, very fluid clay. Allemands soils are ponded with several inches of fresh water most of the year. During periods when the soil is not flooded, the water table does not exceed 15 cm (0.5 ft) below the surface (Murphy and Libersat 1996: 16-17). The entire project area is composed of this soil type.

Larose mucky clay contains a 15.2 cm (6 in) layer of dark gray very fluid mucky clay as a surface layer. Below this a black, very fluid mucky clay that measures approximately 60 cm (24 in) in thickness. It is underlain by 1.5 m (60 in) of dark gray, very fluid clay. Larose soils are ponded with several inches of fresh water for most of the year. During periods when the soil is not flooded, the water table does not progress lower than 15 cm (0.5 ft) below the surface (Murphy and Libersat 1996:47).

Flora and Fauna

A majority of the current study area can be described as Chenier Plain Marsh (Figure 5) and most of the marshes throughout Vermilion Parish resulted from the inundation of the Prairie Formation, which occurred when sea level reached and maintained its present elevation. The freshwater marshes consist of interior marshes and they mainly are found in a relatively large area around White Lake. The brackish marshes are positioned east of White Lake and they protect the freshwater marshes from intrusions of sea water; and along the Gulf Coast in the southeastern and the southwestern corners of the parish lay the saline marshes (Murphy and Libersat 1996: 111-112).

The current study area includes levees and various semi-aquatic habitats including swamps, brackish, freshwater, and limited areas of saline

marsh. Although these marshes are characterized by a lack of arboreal species, arboreal species are present both on the levees and in the seasonally flooded swamps. This composite of coastal habitats supports very rich floral and faunal communities. Tables 1 - 8 contain the common and scientific names of the species present in the current study area (Beavers et al. 1984; Brown 1965, 1972; Chabreck and Condrey 1979; Gosselink 1984; Harrar and Harrar 1962; Lowery 1974; McClane 1974; Reese 1992).

The marshlands and swamps of the project area represent highly productive natural environments and each represents an important stopping and over-wintering point for migratory birds. Permanent residents of this habitat include muskrats, raccoons, otters, mink, alligators, rabbits, and a wide array of water birds, turtles, frogs, and fishes. The marshes also are an essential part of the estuary system that supports and acts as a nursery for a variety of marine species.

The habitats found throughout the immediate project area have been influenced strongly by natural and man-made forces. Through time, the changing course of the Mississippi River has controlled the amount of fresh water flowing down the Atchafalaya River and its related tributaries (e.g., the Vermilion River). Currently, the Atchafalaya River is diverted into the Teche-Vermilion system to supplement the low flows of Bayou Teche and the Vermilion River for seven months of the year. The proposed project area is located approximately 13.6 km (8.5 mi) west of where the Vermilion River drains into Vermilion Bay. The discharge of fresh water into the Vermilion Bay lowers the salinity of the bay; and in turn, the extent of brackish marsh along the shores of the Vermilion Bay is limited by the low salinity. Therefore, the extent of brackish and saline marshes may have been greater in the proposed project area when the discharge of the Mississippi River was directed elsewhere.

In addition, historic and modern modification of the proposed project area has greatly modified the habitats currently found there. Brackish and saline marsh has replaced some of the original freshwater marshes. Much of the current loss of freshwater marsh is due to the dredging and straightening of canals; these methods allow for saltwater intrusion from the Gulf of Mexico, which kills the sensitive vegetation of

the freshwater marshes. If saltwater-tolerant species do not colonize the area, the marsh reverts to open water (Chabreck and Condrey 1979).

Saline Marsh

Small patches of saline marsh may be found directly adjacent to the Gulf of Mexico. These marshes therefore are inundated regularly with saltwater. The dominate plant species found throughout this area include salt grass, rushes, sea blite, and gulf croton (Table 1). The growth of plants within the saline marsh is influenced by a long growing season, high rainfall, rich soils, low tide differentials, and the width of the marsh,

which allows for varying levels of salinity (Chabreck and Condrey 1979:4).

A variety of crustaceans, shellfish, and fish reside in the saline marsh (Tables 2 and 3). Small fish such as silversides, minnows, killifish, and mullet are important to the predatory marine and estuary species, e.g., the flounder, stingray, tarpon, and drum populations, within the area. Many other predatory fish feed on the small and immature crustaceans and shellfish in, or from, the saline marsh. Muskrats, otters, raccoons, and geese also exploit the floral and faunal resources of the area (Table 4).

Table 1. Plant taxa of swamps and levees in Vermilion Parish.

COMMON NAME	LATIN NAME	SWAMPS	LEVEE
Drummond red maple	<i>Acer drummondii</i>	x	x
Box elder	<i>Acer negundo</i>	x	x
Wild onion	<i>Allium canadense</i>		x
Pigweed	<i>Amaranthus</i> spp.		x
Common ragweed	<i>Ambrosia artemisiifolia</i>		x
Peppervine	<i>Ampeopsis arborea</i>	x	x
Hog peanut	<i>Apios americana</i>	x	x
Green dragon	<i>Arisaema dracontium</i>	x	
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	x	
Cane	<i>Arundinaria</i> spp.	x	x
Rattan vine	<i>Berchemia scandens</i>		x
False nettle	<i>Boehmeria cylindrica</i>		x
Trumpet creeper	<i>Campsis radicans</i>	x	x
Sedges	<i>Carex</i> spp.		x
Water hickory	<i>Carya aquatica</i>	x	x
Bitternut hickory	<i>Carya cordiformis</i>	x	x
Pecan	<i>Carya illinoensis</i>		x
Sugarberry	<i>Celtis laevigata</i>	x	x
Buttonbush	<i>Cephalanthus occidentalis</i>	x	
Spiny thistle	<i>Cirsium horridulum</i>		x
Virginia dayflower	<i>Commelina virginiana</i>		x
Dogwood	<i>Cornus</i> spp.		x
Swamp dogwood	<i>Cornus stricta</i>	x	
Hawthorn	<i>Crataegus</i> spp.	x	x
Swamp lily	<i>Crinum americanum</i>	x	
Titi	<i>Cyrilla racemiflora</i>	x	
Rattlebox	<i>Daubentonia texana</i>		x
Persimmon	<i>Diospyros virginiana</i>		x
Horseweed	<i>Erigeron canadensis</i>		x
Mistflower	<i>Eupatorium coelestinum</i>		x
Swamp privet	<i>Forestiera acuminata</i>	x	x
Pumpkin ash	<i>Fraxinus profunda</i>	x	
Ashes	<i>Fraxinus</i> spp.		x
Bedstraw	<i>Galium aparine</i>		x
Water locust	<i>Gleditsia aquatica</i>	x	x
Honey locust	<i>Gleditsia triacanthos</i>		x
Marshmallow	<i>Hibiscus</i> spp.		x
Pennywort	<i>Hydrocotyle</i> spp.		x
Possum haw	<i>Ilex decidua</i>	x	x

Table 1, continued

COMMON NAME	LATIN NAME	SWAMPS	LEVEE
Yaupon	<i>Ilex vomitoria</i>		x
Touch-me-not	<i>Impatiens capensis</i>		x
Marsh elder	<i>Iva frutescens</i>	x	
Wild lettuce	<i>Lactuca canadensis</i>		x
Sweetgum	<i>Liquidambar styraciflua</i>	x	x
Magnolias	<i>Magnolia</i> spp.	x	x
Sensitive plant	<i>Mimosa strigillosa</i>		x
Red mulberry	<i>Morus rubra</i>		x
Wax myrtle	<i>Myrica cerifera</i>		x
Tupelogum	<i>Nyssa aquatica</i>	x	
Black gum	<i>Nyssa biflora</i>	x	x
Virginia creeper	<i>Parthenocissus quiquefolia</i>	x	
Maypops	<i>Passiflora</i> spp.	x	x
Swamp bay	<i>Persea palustris</i>	x	x
Water elm	<i>Planera aquatica</i>	x	x
Sycamore	<i>Platanus occidentalis</i>	x	x
Mayapple	<i>Podophyllum peltatum</i>		x
Knotweeds	<i>Polygonum</i> spp.		x
Ressurrection fern	<i>Polypodium polypodioides</i>	x	x
Water oak	<i>Quercus nigra</i>	x	
Willow oak	<i>Quercus phellos</i>	x	
Oaks	<i>Quercus</i> spp.		x
Swamp honeysuckle	<i>Rhododendron viscosa</i>	x	x
Poison ivy	<i>Rhus radicans</i>	x	x
Snout bean	<i>Rhynchosia minima</i>		x
Brambles	<i>Rubus</i> spp.		x
Palmetto	<i>Sabal minor</i>	x	x
Black willow	<i>Salix nigra</i>	x	
Elderberry	<i>Sambucus canadensis</i>	x	
Sassafras	<i>Sassafras albidum</i>	x	
Skullcap	<i>Scutellaria ovata</i>		x
Cat/green briar	<i>Smilax</i> spp.	x	x
Wild bean	<i>Strophostyles helvola</i>		x
Baldcypress	<i>Taxodium distichum</i>	x	
Shield fern	<i>Thelypteris normalis</i>		x
Spanish moss	<i>Tillandsia usneoides</i>	x	x
American elm	<i>Ulmus americana</i>		x
Stinging nettle	<i>Urtica chamaedryoides</i>		x
Ironweed	<i>Veronia altissima</i>		x
Grapes	<i>Vitis</i> spp.	x	x

Table 2. Plant taxa of marshes with the proposed project area.

COMMON NAME	LATIN NAME	SALINE	BRACKISH	FRESH
Coast milkweed	<i>Asclepias lanceolata</i>		x	
Aster	<i>Aster</i> spp.			x
Backbrush	<i>Baccharis halimifolia</i>		x	
Water hyssop	<i>Bacopa monnieri</i>		x	x
Carex	<i>Carex</i> sp.		x	
Centella	<i>Centella asiatica</i>		x	
Coontail	<i>Ceratophyllum demersum</i>			x
Saw-grass	<i>Cladium jamaicense</i>			x
Gulf croton	<i>Croton punctatus</i>	x		
Umbrella-sedges	<i>Cyperus</i> spp.		x	x
Salt grass	<i>Distichlis spicata</i>	x	x	
Walter's millet	<i>Echinochloa walteri</i>		x	x
Spikerush	<i>Eleocharis</i> spp.		x	x
Sand rush	<i>Fimbristylis castanea</i>		x	

Table 2, continued

COMMON NAME	LATIN NAME	SALINE	BRACKISH	FRESH
Marsh mallow	<i>Hibiscus moscheutos</i>		x	
Whorled pennywort	<i>Hydrocotyle verticillata</i>			x
Spider lily	<i>Hymenocallis caroliniana</i>		x	x
Morning glories	<i>Ipomoea</i> spp.		x	x
Marsh elder	<i>Iva frutescens</i>		x	x
Rushes	<i>Juncus</i> spp.	x	x	x
Virginia saltmarsh mallow	<i>Kosteletzkya virginica</i>		x	x
Cutgrass	<i>Leersia</i> sp.		x	
Sprangle top	<i>Leptochloa fascicularis</i>		x	x
False loosestrife	<i>Ludwigia leptocarpa</i>			x
Loosestrife	<i>Lythrum lineare</i>		x	
Wax myrtle	<i>Myrica cerifera</i>			x
White waterlily	<i>Nymphaea odorata</i>			x
Maidencane	<i>Panicum hemitomon</i>			x
Panicoid grasses	<i>Panicum</i> spp.		x	x
Paspalum	<i>Paspalum</i> spp.			x
Canary grass	<i>Phalaris</i> sp.		x	
Common reed	<i>Phragmites communis</i>		x	x
Camphorweed	<i>Pluchea camphorata</i>		x	x
Smartweed	<i>Polygonum</i> spp.			x
Sago pondweed	<i>Potamogeton pectinatus</i>		x	
Arrowhead	<i>Sagittaria</i> spp.			x
Creeping glasswort	<i>Salicornia virginica</i>	x		
Black willow	<i>Salix nigra</i>			x
Common elderberry	<i>Sambucus canadensis</i>		x	x
Bulrush	<i>Scirpus</i> spp.	x	x	x
Rattlebox	<i>Sesbania</i> spp.			x
Yellow foxtail	<i>Setaria glauca</i>		x	x
Marsh-grass	<i>Spartina</i> spp.	x	x	x
Coast dropseed	<i>Sporobolus virginicus</i>		x	
Sea blite	<i>Sueda tineaans</i>	x		
Gramagrass	<i>Tripsacum dactyloides</i>		x	
Cattail	<i>Typha</i> spp.			x
Deerpea	<i>Vigna luteola</i>		x	x
Giant cutgrass	<i>Zizantopsis miliacea</i>			x

Table 3. Birds present in the marshes of the proposed project area.

COMMON NAME	LATIN NAME
Spotted sandpiper	<i>Actitis macularia</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Seaside sparrow	<i>Ammodramus maritimus</i>
Pond ducks	<i>Anas</i> spp.
Greater white-fronted goose	<i>Anser albifrons</i>
Great blue heron	<i>Ardea herodias</i>
Short-eared owl	<i>Asio flammeus</i>
Diving ducks	<i>Aythya</i> spp.
Solidary sandpiper	<i>Bartramia longicauda</i>
American bittern	<i>Botaurus lentiginosus</i>
Green-backed heron	<i>Butorides striatus</i>
Sandpiper	<i>Calidris</i> spp.
Snipe	<i>Capilla gallinago</i>
Great egret	<i>Casmerodius albus</i>
Boat-tailed grackle	<i>Cassidix major</i>
Belted kingfisher	<i>Ceryle alcyon</i>
Killdeer	<i>Charadrius vociferus</i>
Snow goose	<i>Chen caerulescens</i>
Black tern	<i>Chilonias niger</i>

Table 3, continued

COMMON NAME	LATIN NAME
Common nighthawk	<i>Chordeiles minor</i>
Northern harrier	<i>Circus cyaneus</i>
Wrens	<i>Cistothorus</i> spp.
Fish crow	<i>Corvus ossifragus</i>
Yellow rail	<i>Coturnicops noveboracensis</i>
Heron/egret	<i>Egretta</i> spp.
White ibis	<i>Eudocimus albus</i>
Merlin	<i>Falco columbarius</i>
Artic peregrine falcon	<i>Falco peregrinus tundrius</i>
American kestrel	<i>Falco sparverius</i>
Magnificent frigate bird	<i>Fregata magnificens</i>
Common snipe	<i>Gallinago gallinago</i>
Common moorehen	<i>Gallinula chloropus</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Black-necked stilt	<i>Himantopus mexicanus</i>
Swallows	<i>Hirundinidae</i> family
Louisiana heron	<i>Hydranassa tricolor</i>
Least bittern	<i>Ixobrychus exilis</i>

Table 3, continued

COMMON NAME	LATIN NAME
Gulls	<i>Larus</i> sp.
Black rail	<i>Laterallus jamaicensis</i>
Hooded merganser	<i>Lophodytes cucullatus</i>
Belted sandpiper	<i>Meaceryle alcyon</i>
Swamp sparrow	<i>Melospiza georgiana</i>
Red-breasted merganser	<i>Mergus serrator</i>
Barn swallow	<i>Mirundo rustica</i>
Wood stork	<i>Mycteria americana</i>
Night-heron	<i>Nycticorax</i> spp.
Savannah sparrow	<i>Passerculus sandwichensis</i>
American white pelican	<i>Pelecanus erythrorhynchus</i>
Brown pelican	<i>Pelecanus occidentalis</i>
Double crested cormorant	<i>Pharacrocorax auritus</i>
Glossy ibis	<i>Plegadis falcinellus</i>
Black-bellied plover	<i>Pluvialis squatarola</i>
Eared grebe	<i>Podiceps nigricollis</i>
Purple gallinule	<i>Porphycula martinica</i>
Boat-tailed grackle	<i>Quiscalus major</i>
Rails	<i>Rallus</i> spp.
Bank swallow	<i>Riparia riparia</i>
Terns	<i>Sterna</i> sp.
Tree swallow	<i>Tachycineta bicolor</i>
Royal tern	<i>Thalasseus maximus</i>
Sandpiper/yellow-legs	<i>Tringa</i> spp.

Note: Some of these species are only seasonal residents

Table 4. Birds present in Vermilion Parish

COMMON NAME	LATIN NAME
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Cedar waxwing	<i>Bombycilla cedrorum</i>
Great horned owl	<i>Bubo virginianus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Broad-winged hawk	<i>Buteo platypterus</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Common nighthawk	<i>Chordeiles minor</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Common flicker	<i>Colaptes auratus</i>
Black vulture	<i>Coragyps atratus</i>
Common crow	<i>Corvus brachyrhynchos</i>
Yellow rail	<i>Coturnicops noveboracensis</i>
Downy woodpecker	<i>Dendrocapos pubescens</i>
Acadian flycatcher	<i>Empidonax varescens</i>
American kestrel	<i>Falco sparverius</i>
Wood thrush	<i>Hylocichla mustelina</i>
Wild turkey	<i>Meleagris gallopavo</i>
Mockingbird	<i>Mimus polyglottos</i>
Common screech owl	<i>Otus asio</i>
American woodcock	<i>Philohela minor</i>
Barred owl	<i>Strix varia</i>
Brown thrasher	<i>Toxostoma rufum</i>
Robin	<i>Turdus migratorius</i>
Mourning doves	<i>Zenaida macroura</i>

The outlets of the saline marshes occasionally are visited by fauna more common to the Gulf of Mexico. Whales and dolphins have been spotted in the waters off the Louisiana coast, and there are reports of whales beaching themselves along the Louisiana coast (Lowery 1974). The saline marsh, and its associated estuaries, serve as nurseries for a variety of marine organisms, including blue crabs, shrimp, croaker, bay anchovy, menhaden, and spot.

Brackish Marsh

Brackish marsh habitats, with their slightly saline waters, represent a small portion of the marsh habitats in the current project area. A wider variety of plant species tolerate the slightly saline conditions of the brackish marsh when compared to those that can survive in the saline marsh. The majority of the local plants are marsh-grasses (e.g., *Spartina patens*), bulrushes, panicoid grasses (e.g., *Panicum virgatum*), arrowheads, and other monocotyledonous genera that are well-adapted to this (semi-) aquatic habitat (Table 1). The lack of arboreal plants results in a very open and ecologically productive environment.

The brackish marsh is inhabited by semi-aquatic mammals, birds, reptiles, and amphibians (Tables 4 - 6). Geese often winter in the brackish marshes where the sedges and grasses provide an important source of forage. Muskrat, mink, otter, raccoon, rabbit, nutria, and alligator also populate the brackish marshes, while white-tailed deer may venture into the brackish marsh to graze.

The brackish marsh also is part of the estuary system that serves as a nursery for saltwater fish, shrimp, and crabs (Tables 2 and 3). The seasonal abundance of these species is important for the faunal as well as the human populations of the area. The presence of prehistoric period *Rangia* shell middens attest to the importance of brackish water shellfish to the ancient residents of southern Louisiana.

Fresh Marsh

Freshwater marsh habitats represent a significant portion of the marsh habitats associated with the overall project area. These marshes have very low salinity levels, i.e., zero to four millimhos per centimeter (Craft 1984:40). Common reed, panicoid grasses (e.g., *Panicum hermitomar*), cattail, bulrush, and giant cutgrass are the

Table 5. Mammals present in Vermilion Parish.

COMMON NAME	LATIN NAME
Fin whale family	Balaenopteridae family
Red wolf	<i>Canis rufus</i>
Least shrew	<i>Cryptotis parva</i>
Porpoise and dolphin family	Delphinidae family
Southern flying squirrel	<i>Glaucomys volans</i>
Red bat	<i>Lasiurus borealis</i>
Northern yellow bat	<i>Lasiurus intermedius</i>
Seminole bat	<i>Lasiurus seminolus</i>
River otter	<i>Lutra canadensis</i>
Bobcat	<i>Lynx rufus</i>
Long-tailed weasel	<i>Mustela frenata</i>
North American mink	<i>Mustela vison</i>
Southeastern myotis	<i>Myotis austroriparius</i>
Eastern wood rat	<i>Neotoma floridana</i>
Evening bat	<i>Nycticeius humeralis</i>
White-tailed deer	<i>Odocoileus virginianus</i>
Common muskrat	<i>Ondatra zibethicus</i>
Marsh rice rat	<i>Oryzomys palustris</i>
Cotton mouse	<i>Peromyscus gossypinus</i>
White-footed mouse	<i>Peromyscus leucopus</i>
Sperm whale family	Physeteridae family
Rafinesque's big-eared bat	<i>Plecotus rafinesquii</i>
Northern raccoon	<i>Procyon lotor</i>
Fulvous harvest mouse	<i>Reithrodontomys fulvescens</i>
Gray squirrel	<i>Sciurus carolinensis</i>
Fox squirrel	<i>Sciurus niger</i>
Hispid cotton rat	<i>Sigmodon hispidus</i>
Swamp rabbit	<i>Sylvilagus aquaticus</i>
Eastern cottontail rabbit	<i>Sylvilagus floridanus</i>
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
Gray fox	<i>Urocyon cinereoargenteus</i>
Black bear	<i>Ursus americanus</i>
Beaked whale family	Ziphiidae family

Note: Nutria (*Myocaster coypus*) is an introduced species

Table 6. Reptiles and amphibians present in the proposed project area.

COMMON NAME	LATIN NAME
Northern cricket frog	<i>Acris crepitans</i>
Copperhead	<i>Agkistrodon contortrix</i>
Cottonmouth	<i>Agkistrodon piscivorus</i>
American alligator	<i>Alligator mississippiensis</i>
Three-toed amphiuma	<i>Amphiuma tridactylum</i>
Green anole	<i>Anolis carolinensis</i>
True toads	Bufonidae family
Snapping turtle	<i>Chelydra serpentina</i>
River cooter	<i>Chrysemys concinna</i>
Painted turtle	<i>Chrysemys picta</i>
Pond slider	<i>Chrysemys scripta</i>
Racer	<i>Coluber constrictor</i>
Newts	<i>Diemictylus</i> spp.
Chicken turtle	<i>Dierochelys reticularia</i>
Ratsnakes and cornsnakes	<i>Elaphe</i> spp.
Mud snake	<i>Farancia abacura</i>
Eastern narrowmouth toad	<i>Gastrophryne carolinensis</i>
Mississippi mud turtle	<i>Graptemys komni</i>
Treefrogs	Hylidae family
Mud turtle	<i>Kinosternon subrubrum</i>
Speckled king snake	<i>Lampropeltis getulus</i>
Green water snake	<i>Natrix cyclopion</i>
Plain-bellied water snake	<i>Natrix erythrogaster</i>
Banded water snake	<i>Natrix fasciata</i>
Diamond-backed water snake	<i>Natrix rhombifera</i>
Water snakes	<i>Nerodia</i> spp.
True frogs	Ranidae family
Crayfish snake	<i>Regina</i> spp.
Lesser siren	<i>Siren intermedia</i>
Stinkpot	<i>Sternotherus odoratus</i>
Brown snake	<i>Storeria dekayi</i>
Box turtles	<i>Terrapene</i> spp.
Garter snakes	<i>Thamnophis</i> spp.
Spiny softshell	<i>Trionyx spiniferus</i>

dominant native plants (Table 1). Although monocotyledonous species still dominate this habitat, there are a few arboreal species such as black willow and wax myrtle.

A wider and more permanent variety of mammals, reptiles, and fish inhabit the freshwater marsh rather than the more saline marshes (Tables 3, 4, and 6). The freshwater marshes have many of the same inhabitants as the brackish marshes (e.g., raccoons, rabbits, otters, and alligators). Crawfish and greater concentrations of white-tailed deer also common throughout the freshwater swamps. Lesser numbers of geese and ducks are found in the freshwater marsh when compared to its brackish and saline counterparts (Table 5). A very different array of fish occupy the freshwater marshes, ponds, and lakes of the region. Common fish

include bowfin, freshwater drum, freshwater catfish, shad, sunfish, gar, and bass.

Natural Levees

The natural levees situated along North Prong and Schooner Bayou and their numerous tributaries are the main non-aquatic habitats found throughout the immediate project area. Prehistoric and historic period human habitation of the overall project region most likely focused on such levees. The natural levees afforded ready access to the rich aquatic environments while, at the same time, protecting the residents from frequent flooding. The levee soils also were more productive agriculturally than the surrounding lower lying areas.

The levees support an array of arboreal and understory species (Table 7). Fruit (e.g., sugarberry, persimmon, hawthorn, and red mulberry) and nut (e.g., oak, hickory, and pecan) trees are concentrated on these landforms. In addition, the understory contains a variety of important subsistence (wild onion, pigweed, hog peanut, maypops, knotweed, palmetto, cat/green briar, brambles, elderberry, and grapes) and medicinal (horseweed, marshmallow, yaupon, touch-me-not, mayapple, spanish moss, and stinging nettle) plants.

Terrestrial mammals (Table 4) such as red wolves, bobcats, white-tailed deer, squirrels, cottontail rabbits, and black bears, that may forage in the marsh, were concentrated on the levees. Most of the non-aquatic reptiles and amphibians (Table 6) such as snakes, toads, green anole, treefrogs, and box turtles needed the dry levees to survive in an otherwise semi-aquatic region. The wading and aquatic birds of the marshes and swamps were common visitors to the area. An additional group of terrestrial birds limited to the levees included the raptors, i.e., owls and hawks, woodpeckers, turkeys, and mourning doves (Table 8).

Swamps

Backwater swamps occupy the areas between the freshwater marshes and the raised levees. These low lying areas are dominated by woody plants (Table 5) and generally they are flooded during the growing season. Typical trees growing within the swamps include bald cypress, Drummond red maple, swamp bay, sugarberry, and gum species. Many of the trees have adapted physiologically (e.g., buttressed trunks of bald cypress) to the seasonal flooding of the swamps.

Swamps represent important environments for mink, raccoons, ducks, alligators, and otters (Table 4). Ducks, wading birds, and various song birds also occupy the swamps during the warmer seasons, while white-tailed deer, rabbits, and turkeys frequent the swamps during the drier seasons. Fish such as freshwater catfish, gar, and drum, i.e., species that can tolerate the low oxygen conditions, often are common residents to these areas (Table 3). The swamps also are populated with an array of semi-aquatic turtles, snakes, and amphibians (Table 6).

Table 8. Crustaceans and Shellfish Present in the Proposed Project Area.

COMMON NAME	LATIN NAME	FRESH	ESTUARY
Freshwater clam	<i>Anodonta</i> sp.	x	
Hooked mussel	<i>Brachidontes recurvus</i>		x
Blue crab	<i>Callinectes sapidus</i>		x
Oyster	<i>Crassostrea virginica</i>		x
Freshwater clam	<i>Elliptio</i> sp.	x	
Marsh periwinkle	<i>Littorinia irrorata</i>		x
River shrimp	<i>Macrobrachium ohione</i>	x	
Ribbed mussel	<i>Modiolus demissus</i>		x
Freshwater mussel	<i>Mytilopsis leucopueta</i>	x	
Eastern nassa	<i>Nassarius vibex</i>		x
Grass shrimp	<i>Palaemonetes paludosus</i>		x
Brown shrimp	<i>Penaeus aztecus</i>		x
White shrimp	<i>Penaeus setiferus</i>		x
Freshwater snail	<i>Physa</i> sp.	x	
River crawfish	<i>Procambarus blandingsii</i>	x	
Red swamp crawfish	<i>Procambarus clarkii</i>	x	
Brackish water clam	<i>Rangia cuneata</i>		x
Mud crab	<i>Rithropenopeus harrisi</i>		x

Climate

Statistics for Vermilion Parish are presented to give a general overview of climatic conditions found throughout the overall study area. The current project item lies in a region characterized by a humid subtropical climate; long, hot, rainy summers and short, mild winters are common. The average growing season for Vermilion Parish is 271 days. The average summer temperature, recorded at Vermilion Lock, Louisiana, is 27.5° C (81.5° F), but temperatures have reached as high as 38° C (101° F) (Murphy and Libersat 1996). The oppressive summers, however, are sometimes relieved by cool sea breezes along the more coastal areas. The winter months are relatively mild; average daily temperatures drop below 11° C (52° F) only during December, January, and February (Murphy and Libersat 1996).

On average, precipitation measures 149.86 cm (59 in) annually. July ranks as the wettest month and it receives an average of 21.8 cm

Table 7. Fish Present in Vermilion Parish.

COMMON NAME	LATIN NAME	FRESH	ESTUARY	SEASONAL ESTUARY
Bowfin	<i>Amia calva</i>	x		
Bay anchovy	<i>Anchoa mitchilli</i>			x
American eel	<i>Anguilla rostrata</i>	x		
Pirate perch	<i>Aphredoderus sayanus</i>	x		
Freshwater drum	<i>Aplodinotus grunniens</i>	x		
Sheephead	<i>Archosargus probatocephalus</i>			x
Sea catfish	<i>Arius felis</i>			x
Silversides	Atherinidae family	x	x	
Gafftop catfish	<i>Bagre marinus</i>			x
Atlantic threadfin	<i>Bolydactylus octonemus</i>			x
Gulf menhaden	<i>Brevoortia patronus</i>			x
River carpsuckers	<i>Carpoides carpio</i>	x		
Atlantic spadefish	<i>Chaetodipterus faber</i>			x
Seatrout	<i>Cynoscion</i> sp.			x
Sheepshead minnow	<i>Cyprinodon variegatus</i>		x	
Killifish	Cyprinodontidae family		x	
Carp	<i>Cyprinus carpio</i>	x		
Southern stingray	<i>Dasyatis americana</i>			x
Bluntnose stingray	<i>Dasyatis sayi</i>			x
Shad	<i>Dorosoma</i> spp.	x		
Banded pygmy sunfish	<i>Elassoma zonatum</i>	x		
Ladyfish	<i>Elops saurus</i>			x
Fringed flounder	<i>Etropus crossotus</i>			x
Lyre goby	<i>Evorthodus syricus</i>		x	
Gulf killifish	<i>Fundulus grandis</i>		x	
Topminnows	<i>Fundulus</i> spp.	x		
Mosquitofish	<i>Gambusia affinis</i>	x		
Goby	Gobiidae family			x
Naked goby	<i>Gobiosoma boscii</i>		x	
Least killifish	<i>Heterandria formosa</i>	x		
Freshwater catfish	Ictaluridae family	x		
Brook silverside	<i>Labidesthes sicculus</i>	x		
Pinfish	<i>Lagodon rhomboides</i>		x	
Gars	<i>Lepisosteus</i> spp.	x		
Sunfishes	<i>Lepomis</i> spp.	x		
Atlantic croaker	<i>Mecropogon undulatus</i>			x
Tarpon	<i>Megalops atlantica</i>			x
Tidewater silverside	<i>Menidia beryllina</i>			x
Southern kingfish	<i>Menticirrhus americanus</i>			x
Atlantic croaker	<i>Micropogonias undulatus</i>			x
Largemouth bass	<i>Micropterus salmoides</i>	x		
Basses	<i>Morone</i> spp.	x		
Striped mullet	<i>Mugil cephalus</i>			x
Golden shiner	<i>Notemigonus crysoleucas</i>	x		
Shiners	<i>Notropis</i> spp.	x		
Southern flounder	<i>Paralichthys lethmostigma</i>			x
Bullhead shiner	<i>Pimephales vigilax</i>	x		
Sailfin molly	<i>Poecilia latipinna</i>	x		
Black drum	<i>Pogonias cromius</i>			x
Paddle fish	<i>Polydon spathula</i>	x		
Crappie	<i>Promoxis</i> sp.	x		
Red drum	<i>Sciaenops ocellata</i>			x
Hogchoker	<i>Trinectes maculatus</i>			x

(8.59 in) of rainfall. October, the driest month, averages only 8.43 cm (3.32 in) of precipitation. Thunderstorms are common during the summer months, while snowfall occurs only rarely dur-

ing the winter. Hurricanes and tropical storms represent the most dangerous weather threat to the area; they occur every few years during both the summer and fall.

CHAPTER III

PREHISTORIC CULTURAL SEQUENCE

Introduction

The proposed Schooner Bayou project area lies entirely on the Coastal Plain and within a portion of Vermilion Parish, Louisiana. This parish is contained within Management Unit III, as defined by *Louisiana's Comprehensive Archaeological Plan* (Smith et al. 1983). This management unit is bordered to the west by the Sabine River and to the east by the Atchafalaya River, and it includes the sparsely settled prairies and coastal marshes of southern and southwestern Louisiana. The study area also lies within the Southeastern Cultural Area of the United States (Muller 1983). As a result, cultural characteristics found within the proposed project area resemble those manifested throughout the Lower Mississippi valley and along the northern coast of the Gulf of Mexico, as well as in other parts of the region.

The prehistory of Management Unit III extends from ca. 12,000 - 250 B.P. (10,000 B.C.-A.D. 1700) and it can be divided into four general archeological stages. These four stages (Paleo-Indian, Archaic, Woodland, and Mississippian) represent developmental periods characterized by patterns of subsistence and technology (Willey and Phillips 1958). Each stage consists of a sequence of chronologically defined periods that may be subdivided into phases based on sets of artifacts and other cultural traits characteristic of a particular geographic region (e.g., Jenkins 1979; Walthall 1980). This chapter will present a concise discussion of each of the cultural units to provide an overview of the prehistoric sequence of the current project area.

Paleo-Indian Stage (ca. 12,000 - 8000 B.P. [10,050 - 6050 B.C.]

Initial human occupation of the southeastern United States generally is believed to have occurred sometime between 10,000 and 12,000 years ago (12,000 - 10,000 B.P. [10,050 - 8050 B.C.]). Paleo-Indian sites are characterized by a distinctive assemblage of lithic tools including fluted and unfluted lanceolate projectile points/knives, unifacial end and side scrapers, graters, and spokeshaves.

The earliest Paleo-Indian culture identified in North America has been named "Clovis," after the type-site identified in the Southwest. In the western United States, Clovis sites appear to fall within a relatively narrow time range between 11,500 - 10,900 B.P. (9950 - 8950 B.C.) (Haynes 1991; Story et al. 1990:178). The smaller, fluted Folsom and unfluted Midland projectile points/knives once were thought to postdate Clovis times. Radiocarbon dating of numerous Folsom components in Texas, however, has produced dates ranging from ca. 11,000 - 10,000 B.P. (9050 - 8050 B.C.) (Largent et al. 1991:323-332; Story et al. 1990:189). This suggests that Folsom culture may be partially contemporaneous with Clovis culture.

Paleo-Indian peoples are thought to have been highly mobile hunter-gatherers, organized in small bands or extended family groups. The formerly prevalent notion that the Paleo-Indian populations were represented by specialized big game hunters seems less tenable as information becomes available from a more inclusive set of Paleo-Indian sites. A possible exception to a gen-

eralized subsistence system could be the Folsom culture. For example, Folsom artifacts have been associated consistently with bison kill sites on the Great Plains. This culture may represent an adaptation to a specialized hunting strategy associated with the cyclical migration of large herds of bison (Story et al. 1990:189).

The presence of Paleo-Indian and Early Archaic peoples in southern Louisiana is best documented from Avery Island in Iberia Parish. The physiographic relief of the island apparently attracted both mammalian and human visitors to Avery Island throughout its history. As of 1983, *Louisiana's Comprehensive Archaeological Plan* documented only four Paleo-Indian sites within Management Unit III (Smith et al. 1983). While three of these sites were identified a substantial distance away from the current study area, the fourth, on Avery Island (Site 16IB3), demonstrates the presence of Late Paleo-Indian sites within the Coastal Zone, although restricted to a rather unique environment.

Archaic Stage (ca. 8000 - 3500 B.P. [6050 - 1550 B.C.]

The term "Archaic" first was developed in the second quarter of the twentieth century as a descriptor for the pre-ceramic cultures that followed the Paleo-Indian Stage. The Archaic Stage can be divided into three subdivisions or periods: Early Archaic, Middle Archaic, and Late Archaic. A warming trend and a drier climate at the end of the Pleistocene, accompanied by a rise in sea level, may have spurred a combination of technological and social developments that are now associated with the initiation of the Archaic Stage (Willey and Phillips 1958). Archaic populations exploited a greater variety of terrestrial and marine species than their Paleo-Indian predecessors.

Early Archaic Period

In the Southeast, the Early Archaic period begins ca. 10,000 - 8000 B.P. (8050 - 6050 B.C.), but because of regional variations and the temporal overlapping of stages, the assignment of Late Paleo-Indian and Early Archaic period artifacts to correct temporal stages can be complex.

Throughout the Early Archaic, the subsistence pattern probably resembled that of the preceding Paleo-Indian Stage. Early Archaic peoples traveled seasonally in small groups between a

series of base camps and extractive sites, hunting deer and collecting edible plants (Chapman and Shea 1981; Lentz 1986; Parmalee 1962; Parmalee et al. 1976). The majority of identified sites have been located in the uplands and Gulf Coastal Plain, but the extent to which the marshland environments of the Coastal Zone were utilized remains unknown.

Tools associated with food processing, including manos, milling stones, and nutting stones, first appear in Early Archaic period sites. Commonly utilized plant foods, such as walnuts, hickory nuts, and acorns, could be hulled and eaten without cooking or additional processing (Larson 1980). Much of our knowledge regarding Paleo-Indian and Archaic lifeways is limited, therefore, by problems of preservation. Lithic tools often are the only artifacts to survive, but they provide only limited information about a narrow range of activities (i.e., the manufacture and maintenance of tools, the processing of meat and hides, and the working of wood and bone). In south-central Louisiana, Early Archaic period projectile points/knives have been recovered from Avery Island (16IB23) in Iberia Parish (Gagliano 1964:70), one of the parishes encompassed by Management Unit III.

Middle Archaic Period

During the Middle Archaic, three interrelated events occurred that helped shape the development of prehistoric cultures. First, the effects of continental glaciation subsided, resulting in a warmer and drier climate, with modern climatic and environmental conditions prevailing. Second, sociopolitical organizations changed in some areas; an increased number of ranked societies and related social developments appeared. Finally, technological improvements occurred, particularly with respect to groundstone, bone, and antler implements.

This period is typified by the Morrow Mountain horizon. Morrow Mountain projectile point/knife forms are distributed widely; they have been recovered from the eastern seaboard to as far west as Nevada, and from near the Gulf of Mexico to as far north as New England (Walthall 1980). Small to medium-sized, triangular projectile points/knives with short tapered stems characterize this horizon.

In Louisiana, the Middle Archaic is represented by projectile points/knives that include Morrow Mountain, Johnson, Edgewood, and possibly Calcasieu types (Campbell et al. 1990:96; Green 1991; Perino 1985:195). The possible utilization of the Coastal Zone during the Middle Archaic period is suggested by the occurrence of a Morrow Mountain I projectile point/knife (ca. 7000 - 6000 B.P. [5050 - 4050 B.C.]) from Avery Island (Gagliano 1964:71).

Late Archaic Period

The Late Archaic period represents a time of population growth, as demonstrated by an increasing number of sites found throughout the United States. Stone vessels made from steatite, occasional fiber tempered pottery, and ground-stone artifacts characterize the period. Late Archaic projectile point/knife types found throughout Louisiana include corner-notched and stemmed forms.

In the eastern United States, the Late Archaic riverine economy focused on a few specific wild resources, including deer, mussels, fish, and nuts. During the spring, macrobands formed to exploit forested riverine areas, while during late fall and winter, Late Archaic peoples split into microbands and subsisted on harvested and stored nut foods and faunal species commonly found in the upland areas.

Archaic period sites typically are found along the boundary of Quaternary and Tertiary areas with relatively flat or undulating bluff tops that overlook the floodplains. Gibson (1976:11) notes that most of the Archaic Stage sites in south-central Louisiana have been found on the old, elevated landforms of the Lafayette-Mississippi River system and near the lowlands. As of 1983, 40 Archaic period sites had been documented in Management Unit III (Smith et al. 1983); but only one of these was located in Vermilion Parish. The Banana Bayou Site (16IB104), produced a radiocarbon date calibrated at (ca. 5850 - 4805 B.P.) 3900 - 2855 B.C. (Gibson and Shenkel 1988). This suggests that land forms associated with the Teche delta complex may be old enough to contain Late Archaic period deposits.

Poverty Point Culture (ca. 4000 - 2500 B.P. [2050 - 550 B.C.])

Poverty Point represents a transitional culture that originated ca. 4000 B.P. (2050 B.C.), but it did not realize its full potential until much later. As a result, the Poverty Point sphere of influence may not have arrived in the coastal region of south-central Louisiana until ca. 3450 B.P. (1500 B.C.) (Gibson 1979, 1994; Neuman 1984). The culture is best represented at the type site (16WC5) in northeast Louisiana. Poverty Point is best known for exhibiting several fundamental and distinguishing characteristics of a complex society, i.e., massive public architecture and long-distance trade, while maintaining a hunting and foraging economy (Jackson 1991).

The material culture of Poverty Point society was distinctive. Materials associated with Poverty Point culture include *atl atl* weights, plummets, beads and pendants, thin micro flints/blades, clay cooking balls, clay figurines/fetishes, and food storage and preparation containers. Container types included steatite vessels, basketry, and untempered ceramic materials. Most ceramic vessels were sand tempered, although a minority of grit tempered, clay tempered, fiber tempered ceramics, and untempered sherds and vessels have been recovered. Webb (1982) reported the recovery of seed processing implements, stone hoe blades, nutting stones, and milling stones. Earthen ovens also have been identified.

Possible Poverty Point sites identified in the Coastal Zone of south-central Louisiana consist of camp on Avery Island and Belle Isle (Gagliano 1964:98; Gibson et al. 1978:33-34). While Poverty Point shell midden sites in southeast Louisiana suggest seasonal and specialized adaptations to marsh environments, the dearth of similar sites in south-central Louisiana is suggested by Gibson et al. (1978) to represent a period in which the LaFourche deltaic complex was subsiding. *Louisiana's Comprehensive Archaeological Plan* lists only 15 Poverty Point sites in Management Unit III (Smith et al. 1983). None of these were located within Vermilion Parish.

Woodland Stage (ca. 2450 - 750 B.P. [500 B.C.- A.D. 1200])

The Woodland Stage in Louisiana is characterized by a combination of horticulture, the introduction of the bow and arrow, and the widespread use of ceramics. The Woodland Stage is subdivided into three periods: Early, Middle, and Late. In south-central Louisiana, i.e., in the coastal region of the state, the Early Woodland period (ca. 2450 - 1949 B.P. [500 B.C.- A.D. 1]) is represented by the Tchefuncte culture; the Middle Woodland period (ca. 1949 - 1550 B.P. [A.D. 1 - 400]) is associated with Marksville culture, and to a lesser extent the Troyville culture; while the Late Woodland period (ca. 1550 - 750 B.P. [A.D. 400 - 1200]) originated with the Troyville culture but was dominated by Coles Creek culture.

Tchefuncte Culture (ca. 2450 - 1949 B.P. [500 B.C. - A.D. 1])

Tchefuncte culture is characterized by the first widespread use of pottery, although within the context of a Late Archaic-like hunting and gathering tradition that utilized a Late Archaic-like tool inventory (Byrd 1994; Neuman 1984; Shenkel 1981:23). Tchefuncte ceramics usually are characterized by their soft, chalky paste, and laminated appearance (Phillips 1970). Vessel forms consist of bowls, cylindrical and shouldered jars, and globular pots that sometime exhibit podal supports. Many vessels are plain; however, some are decorated with punctations, incisions, simple stamping, drag and jab, and rocker stamping. During the later portions of this time period, red filming also was used to decorate some vessels (Perrault and Weinstein 1994:46-47; Phillips 1970; Speaker et al. 1986:38).

For the most part, the stone and bone tool subassemblages remained nearly unchanged from the preceding Poverty Point culture. Stone tools utilized by these people included boat stones, grooved plummets, chipped celts, and sandstone saws; bone tools included awls, fish hooks, socketed antler points, and ornaments. In addition, some tools such as chisels, containers, punches, and ornamental artifacts were manufactured from shell. Bone and antler artifacts, such as points, hooks, awls, and handles, also became increasingly common during this period.

Tchefuncte sites generally are classified either as coastal middens, or as inland villages or hamlets. Settlement usually occurred along the slack water environments of slow, secondary streams that drained bottomlands, floodplain lakes, and littoral zones (Neuman 1984; Toth 1988:21-23). Shell midden sites and their associated faunal remains are well known for Tchefuncte culture and they document the wide variety of food resources utilized during this period. From southwest and south-central Louisiana Tchefuncte burials and artifacts suggest an egalitarian social organization. Social organization probably remained focused within macrobands, and hunting, gathering, and fishing remained integral to the Tchefuncte lifestyle.

As of 1983, the original publication date for *Louisiana's Comprehensive Archaeological Plan*, 37 Tchefuncte period sites or components had been documented in Management Unit III (Smith et al. 1983); four of which are located within Vermilion Parish. None of these sites, however, are located within the vicinity of the current study area.

Marksville Culture (ca. 1949 - 1550 B.P. [A.D. 1 - 400])

Marksville culture often is viewed as a localized version of the elaborate midwestern Hopewell culture which filtered down the Mississippi River from Illinois (Toth 1988:29-73). A more highly organized social structure than their Tchefuncte predecessors is implied by the complex geometric earthworks, conical burial mounds used for burying the elite, and the unique mortuary ritual systems that characterize Marksville culture. Some items, such as elaborately decorated ceramics, were manufactured primarily for inclusion in burials. Burial items associated with this culture include pearl beads, carved stone effigy pipes, copper ear spools, copper tubes, galena beads, and carved coal objects. Toward the end of the Marksville period, however, Hopewellian influences declined, and mortuary practices became less complex (Smith et al. 1983; Speaker et al. 1986).

Ceramic decorative motifs such as decorating with cross-hatching, U-shaped incised lines, zoned dentate rocker stamping, cord-wrapped stick impressions, stylized birds, and bisected

circles were shared by both the Marksville and Hopewell cultures (Toth 1988:45-50). Additional Marksville traits include a chipped stone assemblage of knives, scrapers, celts, drills, ground stone *atl atl* weights and plummets, bone awls and fishhooks, baked clay balls, and medium to large stemmed projectile points dominated by the Gary type.

A variety of exotic artifacts commonly found at Marksville sites suggests extensive trade networks and the development of a ranked, non-egalitarian society. Some of the more commonly recovered exotic items include imported copper earspools, panpipes, platform pipes, figurines, and beads (Neuman 1984; Toth 1988:50-73). The utilitarian material culture remained essentially unchanged, reflecting an overall continuity in subsistence systems (Toth 1988:211). Marksville peoples probably used a hunting, fishing, and gathering subsistence strategy much like those associated with earlier periods. Gagliano (1979) suggests that food procurement activities were a cyclical/seasonal (transhumance) activity that revolved around two or more shifting camps.

Recent investigations in Terrebonne and St. Mary Parishes have identified additional Marksville period sites, including mound sites, hamlets, and shell middens (Weinstein and Kelly 1989). Weinstein and Kelley (1989:294-295) concluded, from reviewing the Marksville period ceramics recovered from the identified sites in the region, that the early through late Marksville periods were represented. As of 1983, the original publication date for *Louisiana's Comprehensive Archaeological Plan*, 38 Marksville sites had been documented in Management Unit III (Smith et al. 1983); only seven of these sites have been identified within Vermilion Parish.

Troyville-Coles Creek Period (ca. 1550 - 750 B.P. [A.D. 400 - 1200])

Troyville culture, called Baytown elsewhere, represents a transition from the Middle to Late Woodland period that culminated in Coles Creek culture (Gibson 1984). Though distinct, these two cultures are sufficiently similar that many researchers group them as a single prehistoric cultural unit. The continuing developments of agriculture and the refinement of the bow and arrow

during this time, radically altered subsequent prehistoric lifeways. During the Troyville cultural period, bean and squash agriculture may have become widespread based on the appearance of large ceramic vessels. This shift in subsistence practices probably fostered the development of more complex settlement patterns and increased social organization.

The Late Woodland Coles Creek culture emerged from Troyville around 1200 B.P. (A.D. 750) and represented an era of considerable economic and social change in the Lower Mississippi Valley. By the end of the Coles Creek period, communities became larger and more socially and politically complex, large-scale mound construction occurred, and there is evidence for the resumption of long-distance trade on a scale not seen since Poverty Point times (Muller 1983). These changes probably initiated the transformation of Coles Creek cultural traits into what is now recognized as Plaquemine culture sometime before 750 years ago (A.D. 1200) (Jeter et al. 1989; Williams and Brain 1983).

Ceramics of this period are distinguished by their grog and grog/sand tempers, as opposed to the chalky, sand tempered paste characteristics of previous ceramic series. Sites dating from the Coles Creek cultural period primarily were situated along stream systems where soil composition and fertility were favorable for agriculture. Natural levees, particularly those situated along old cutoffs and inactive channels, appear to have been the most desirable locations (Neuman 1984). Most of the larger Coles Creek sites, usually located in more inland areas, typically contain one or more mounds.

Along the Louisiana Coastal Zone, agriculture probably represented a minor, if not non-existent, portion of the subsistence pattern during the Troyville-Coles Creek period. Gibson et al. (1978:41) note that tidal fluctuations, saline conditions, and restricted quantities of elevated ground on which to grow crops preclude substantial cultivation in the Coastal Zone. *Louisiana's Comprehensive Archaeological Plan* documents 196 sites with Troyville-Coles Creek components within Management Unit III (Smith et al. 1983). Of these 196 sites, 11.7 percent (n= 23) are located within Vermilion Parish.

Mississippian Stage (ca. 750 - 300 B.P. [A.D. 1200 - 1700])

The Mississippian Stage represents a cultural climax in population growth and social and political organization for those cultures occupying the southeastern United States (Phillips 1970; Williams and Brain 1983). Formalized site plans consisting of large sub-structure "temple mounds" and plazas have been noted throughout the Southeast (Hudson 1978; Knight 1984; Williams and Brain 1983; Walthall 1980). The Mississippian Stage in southern Louisiana contains two subdivisions: the Plaquemine or Emergent Mississippian period (750 - 500 B.P. [A.D. 1200 - 1450]) and the Late Mississippian period (500 - 250 B.P. [1450 - 1700]). Late Mississippian culture is only found in limited parts of the coastal zone of south-central Louisiana and it may never have reached southwest Louisiana (Brown 1981; Brown and Brown 1978; Jeter et al. 1989). In the current study area, the Plaquemine culture may have lasted until after the period of European contact (200 B.P. [A.D. 1750]) (Gibson 1976; Jeter et al. 1989).

Emergent Mississippian Period (ca. 750 - 500 B.P. [A.D. 1200 - 1450])

The Emergent Mississippian period - Plaquemine culture represents a transitional phase from the Coles Creek culture to a pure Mississippian culture (Kidder 1988). Plaquemine peoples continued the settlement patterns, economic organization, and religious practices established during the Coles Creek period; however, socio-political structure, and religious ceremonialism intensified, suggesting a complex social hierarchy. Large sites typically are characterized as ceremonial sites, with multiple mounds surrounding a central plaza. Smaller dispersed villages and hamlets also formed part of the settlement hierarchy (Neuman 1984).

Although Plaquemine ceramics are derived from the Coles Creek tradition, they display distinctive features that mark the emergence of a new cultural tradition. In addition to incising and punctating pottery, Plaquemine craftsmen also brushed and engraved vessels (Phillips 1970). By ca. 500 B.P. (A.D. 1450), the Plaquemine culture in much of the Lower Mississippi Valley apparently had evolved into a true Mississippian culture (Kidder 1988:75).

Plaquemine sites are rarely recorded in south-central Louisiana. Those identified along Bayou Teche, the Vermilion River, and the Lower Atchafalaya Basin do not exhibit the cultural traits found in the Lower Mississippi Valley and Lower Red River Valley (Gibson 1976:20; Gibson et al. 1978:44). Most sites are reported to be shell middens or small villages described as less elaborate than the inland Plaquemine sites. Rectangular mound sites with centralized plazas are not altogether unknown in the region, but occur less frequently than in other areas (Gibson 1976:20). In addition to shell middens and villages, specialized sites also have been identified. The Salt Mine Valley Site (16IB23) situated on Avery Island is one such specialized site. Prehistoric salt production in the United States gained importance primarily during the Mississippian period, post ca. A.D. 900 (Brown 1981:1).

Coastal Plaquemine in south-central Louisiana, unlike groups located further inland and to the east, possibly remained unchanged until ca. A.D. 1750, according to ethnographic accounts. *Louisiana's Comprehensive Archaeological Plan* documents 83 Plaquemine cultural period sites in Management Unit III (Smith et al. 1983). Of the 83 Plaquemine sites in Management Unit III, 16 are located with Vermilion Parish.

Late Mississippian Period (ca. 500 - 250 B.P. [A.D. 1450 - 1700])

During this time, several traits that are now definitive of the Mississippian period were widespread across most of the Southeast. These diagnostic traits include the construction of well-designed mound groups, a wide distribution of sites and trade networks, shell tempered ceramics, and a revival in the ceremonial burial of the dead (Griffin 1990:7-9). Mississippian subsistence was based on the cultivation of maize, beans, squash, and pumpkins; the collection of local plants, nuts, and seeds; and fishing and hunting of local species. A typical Mississippian settlement consisted of an orderly arrangement of village houses, surrounding a truncated pyramidal mound. These mounds served as platforms for temples or as houses for the elite.

Ceramic types frequently are characterized by shell tempering, an innovation that enabled potters to create larger vessels (Brain 1971; Steponaitis 1983). Ceramic vessels included such

forms as globular jars, plates, bottles, pots, and salt pans. The loop handle has appeared on many Mississippian vessels. Although utilitarian plainware was common, decorative techniques include engraving, negative painting, and incising; modeled animal heads and anthropomorphic images also adorned the ceramic vessels. Other Mississippian artifacts include chipped and groundstone tools; shell items such as hairpins, beads, and gorgets; and mica and copper items. Chipped and ground stone tools and projectile point styles such as Alba and Bassett also were common.

In south-central Louisiana, the Late Mississippian period is less clearly defined than in other areas of the state. As previously stated, some continuity may have existed between earlier Plaquemine occupations and later occupations in the region. Recent investigations tend to support the position that Plaquemine culture dominated the region during the Mississippian period. Evidence of this results from research in the Terrebonne Marsh in south-central Louisiana, which found that shell tempered "Mississippian" ceramic wares were in the minority, while Plaquemine ceramics were represented heavily at most sites in the area (Weinstein and Kelley 1992:378).

Although probably under reported, the original version of *Louisiana's Comprehensive Archaeological Plan* documented 17 Mississippian cultural period sites/components in Management Unit III, including three that were identified within Vermilion Parish (Smith et al. 1983). While not reported, hybrid Mississippian like artifacts may be found in association with Plaquemine, Attakapan, or Chitimacha sites that date from either the protohistoric or early historic cultural periods.

Protohistoric and Early Historic Period (ca. 411 - 220 B.P. [A.D. 1539 - 1730])

An understanding of protohistoric and historic Native American cultures of the southeastern United States is limited severely by the frequent inability to recognize the ancestral cultures from which these historic groups were derived. This is due partially to the waning influence of Mississippian and, to a lesser degree, Plaquemine culture, but primarily it is a result of the social disruption initiated by the legacy of the Hernando de Soto entrada of 1539 -1543, and the subsequent French and Spanish exploration and coloni-

zation of the Southeast. Native American population upheavals and depletions were related to warfare, disruptive migrations, and epidemics introduced by European contact (Davis 1984; Smith 1977). Villages apparently remained similar to those observed previously at Plaquemine and Mississippian sites. The larger villages generally featured one or more truncated pyramidal mounds surmounted by chiefs' houses and temples; the remaining villagers lived in the area surrounding the mounds and in satellite hamlets. Houses were rectangular in shape and were constructed of poles placed in the ground, with wattle and daub walls, and thatched roofs (Swanton 1946). The French learned cultivation techniques for corn, squash, potatoes, tobacco, and other indigenous crops from the Chitimacha and the French apparently lived in those Native American communities during times of famine.

Gibson (1976:21) states that early colonists arriving in the region "found the Plaquemine culture still flourishing" in the 1700s. These inhabitants may have been the Vermilion band of the Attakapa tribe and the Chitimacha tribe. They also identify the Chitimacha occupying areas along lower Bayou Teche, Grand Lake, and the Atchafalaya River.

The Attakapa originated in southeast Texas, but, following varying degrees of interaction, began migrating to southwest Louisiana during the Late Prehistoric Period. Swanton (1953:197-199) recounts that the easternmost Attakapa resided on the Mermentau River and in the vicinity of Vermilion Bay. In 1760, the Attakapa sold the land located between Bayou Teche and the Vermilion River, where their village was located, to a French settler, Fusilier de la Clair (Swanton 1946). The village, however, continued to be occupied by the band until the early nineteenth century.

The Chitimacha originally were located on Bayou Lafourche, Grand Lake, and the lower portion of Bayou Teche (Kniffen et al. 1987:53; Swanton 1946:119, 1953:202-204). In 1702, Louis Antoine Juchereau de St. Denis took members of the Chitimacha tribe as slaves, but it was immediately ordered to return them to their people by Jean Baptiste le Moyne, Sieur de Bienville. In 1706, the alliance was broken when the Chitimacha attacked and killed four Frenchmen, in retaliation for an attack carried out by the Teansas

earlier that same year. For the next 12 years, the Chitimacha fought the French and their Native American allies. In 1718, peace terms were stipulated, and agreed upon, resulting in the Chitimacha relocating to the Mississippi River near the present-day town of Plaquemine. Within a short period, however, the Chitimacha, once the

strongest and most "cultured" of the south Louisiana tribes, reduced in numbers, joined the Atakapa and Houma. Subsequently, only a few Chitimacha remained by 1881 and those were on a reservation located near the town of Charenton (Kniffen et al. 1987:75).

HISTORIC OVERVIEW

groups that migrated to the area are provided to clarify historic land use patterns throughout the general area. This chapter chronicles the development of the Attakapas district during the Spanish and French colonial period, the territorial and antebellum eras, the Civil War era, the postbellum era, and the twentieth century. Particular attention paid to the area now known as Vermilion Parish.



The Colonial Period

During the French and Spanish colonial periods, the study area was included in that part of the Louisiana colony known as the Attakapas region, so-named for the Native American tribes indigenous to the area. French trappers and concessionaires were joined in the Attakapas region by the Acadians, many from the Chignecto Isthmus of Nova Scotia, and Malagans, emigrants from the Costa del Sol in southern Spain. By the end of the Spanish regime, Bayou Teche, upper Bayou Sale, and the Vermilion River were lined with land claims (Bergerie 1962:3-11; Brasseaux 1987:91-98, 122; Davis 1971:131; Taylor 1980; Vermilion Historical Society 1983:7-9).

French Colonial Period

Nearly 140 years following the last of the unsuccessful sixteenth century Spanish expeditions through the Louisiana region, the French began their exploration of the lower Mississippi River. On April 9, 1682, René Robert Cavelier, Sieur de la Salle, claimed all lands drained by the Mississippi River for Louis XIV, King of France. Approximately, sixteen years later, in 1698-1699, Pierre le Moyne, Sieur d'Iberville, led an expedition to explore the lower "Colbert or Mississippi River, from its mouth to the Natchez Nation," and to "establish a colony in Louisiana" (French 1875:29, 31).

Shortly after the founding of the Louisiana colony in 1699, the French began to establish permanent settlements along the Mississippi River and the Gulf Coast; however, the French Government discouraged colonization of southwestern Louisiana. Additionally, settlers were reluctant to leave the security of the Mississippi River posts for "the west," as the territory then was called by the French colonists. Still, Spanish missionaries reported secluded groups of colonists throughout the Attakapas as early as 1713. The Native Americans of the Attakapas-Opelousas region initiated trade with the colonial government, offering pelts, tallow, and horses in exchange for French goods. By the 1740s, a profitable deerskin and fur trade had been established with the "Attakapas Country," whose name had replaced "the west" as the common designation for southwestern Louisiana (Bergerie 1962:3; De Ville 1973:24-31, 1986:4; Fontenot and Freeland

1976:1; Iberia Parish Development Board ca. 1949:12).

By the mid-eighteenth century, the French discovered that the southwestern Louisiana prairies were well-suited for tobacco cultivation and for cattle ranging (De Ville 1973:31-33, 1986:4). Edouard Masse, one of the earliest documented settlers in the area of present-day St. Martinville, probably arrived during the 1740s. Masse owned 20 slaves, possessed a partnership in a cattle ranch, and lived in crude frontier conditions:

[He] lived in an open shack, slept on bearskin stretched on boards, and dressed in deer skins. His only utensils were a knife and horn, both of which he carried with him. He lived this way for nearly twenty years, extending hospitality to anyone asking for it; but there were few comforts to induce any travelers to linger there (Bergerie 1962:4).

In 1760, Masse and his partner, retired military officer Antoine Bernard Dauterive, were granted an Attakapas concession upon which they established a cattle ranch, or *vacherie*. This grant was located on the east side of Bayou Teche near the present-day site of Loreauville. The Dauterive-Masse concession later became the site of the first Acadian settlement in the region, *Fausse Pointe* (Brasseaux 1987:75, 91-92).

The French government proposed a military post in the Attakapas country as part of its plan to protect and secure the boundaries of the developing Louisiana colony. The *Poste des Opelousas* was established under the command of Louis Pellerin in 1763, shortly before western Louisiana was transferred officially to Spain. The Opelousas Post, situated in the vicinity of modern-day Port Barre (i.e., in St. Landry Parish), apparently was referred to as Attakapas, in reference to the region that it served; however, the use of the name was discontinued with the establishment of the *Poste des Attakapas* at present-day St. Martinville (Brasseaux 1987:94; De Ville 1973:32-34; Fontenot and Freeland 1976:19; Pittman 1973:36).

Spanish Colonial Period

On November 3, 1762, under terms of the Treaty of Fontainebleau, France secretly ceded the Isle of Orleans and all of the Louisiana col-

only west of the Mississippi River to Spain. Not only did France rid itself of the heavy financial burden of administering and supporting the colony, but the transfer also prevented a sizeable portion of the territory from falling under British control as a result of the impending English victory in the French and Indian War. Although the transfer was announced publicly in 1764, it was not until 1769 that the French colonial government finally was abolished and Spanish control was established under the governorship of Alejandro O'Reilly (Chambers 1898:48; Davis 1971:69-70, 97-105).

The Acadians

During the transitional period from French to Spanish rule, small groups of Acadians arrived in Louisiana and they were sent by the French government in New Orleans to the Attakapas and Opelousas regions (Figure 9). The Spanish Attakapas District extended "along the sea coast between the Delta of the Mississippi and the Western boundary" (the Sabine River), while the Opelousas District adjoined Attakapas to the north

(Sibley 1806:97). Several Acadian settlements were established ca. 1765-1766 in these southwestern districts. First and southernmost, in the present-day Loreauville area, was *Fausse Pointe*, originally called "*le dernier camp d'en bas*" (roughly, "the last camp of the lower side"). To the northwest, along Bayou Teche between present-day Parks and the original site of the Opelousas Post, were *La Pointe de Repos*, *La Manque*, and *Prairie des Coteaux*. *Côte Gelée* was established on the west bank of Bayou Tortue, to the west of the *Fausse Pointe* and *La Pointe* settlements. All of these early Acadian communities lay north of the study area, but their establishment was paramount to the development of the region (Brasseaux 1987:93-95).

On April 4, 1765, eight Acadian "Chieftains" (or family leaders) agreed to go to the Attakapas region to settle lands owned by Antoine Bernard Dauterive and Edouard Masse at *Fausse Pointe* (i.e., present-day Loreauville), on the east bank of Bayou Teche. In return for tending the cattle of the Dauterive-Masse *vacherie* for a period of six years, Dauterive promised to supply each family with "five cows and their calves, one bull, and one half-interest in the produce grown and cultivated on his lands in the Attakapas Country" (Rees 1965:25). In addition, the Acadians would receive the concession granted to Dauterive and Masse five years earlier. It was agreed that the livestock would be delivered when the Acadians arrived at the Attakapas. The French colonial government also supplied the Acadians with "sufficient flour, hardtack, hulled rice, and salt pork and beef to support them for six months" (Brasseaux 1987:75). The families also were given seed rice, seed corn, and all necessary tools. The eight Acadian "Chieftains" included Joseph Broussard (who was called "Beausoleil"), Alexandre Broussard, Joseph Guilbeau, Jean Dugas, Olivier Tibaudau, Jean-Baptiste Broussard, Pierre Arceneau, and Victor Broussard (Bergerie 1962:5-6; Brasseaux 1987:74-76; Rees 1965:25).

Despite the attractive offer, the eight families soon abandoned their arrangement with Dauterive:

... within days of their arrival at the [Attakapas] post, the Acadians were denounced as trespassers by Dauterive's neighbors. More-

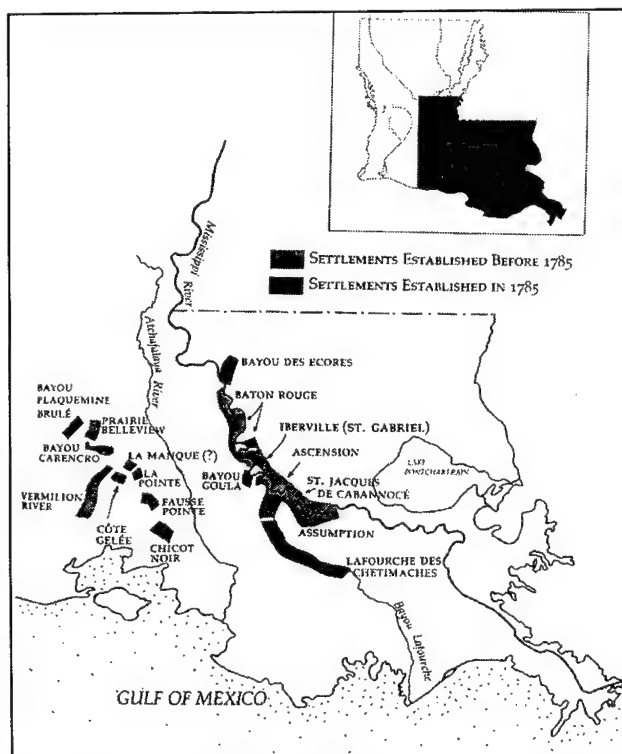


Figure 9. Areas of Acadian Settlement. Carl A. Brasseaux (1987) From "The Founding of New Acadia", LSU Press.

over, in 1771 Dauterive, who had recently become sole proprietor of the ranch, donated a large portion of the designated settlement site to St. Martin de Tours Catholic Church. Finally, rather than raise cattle on shares for Dauterive, the exiles purchased an undetermined number of cattle from Jean-Baptiste Grevemberg shortly after their arrival at Fausse Pointe. These settlers immediately sought patents to the land, thereby invoking the wrath of their neighbor, Jean-Baptiste Grevemberg, who claimed the area between Fausse Pointe and the Vermilion River as his personal fiefdom. In mid-July, Grevemberg addressed a memorial to Governor [Charles-Philippe] Aubry and Commissaire-ordonnateur [Denis-Nicolas] Foucault, asserting his right to the land and requesting a patent to his fourteen-year-old *vacherie*. Despite the cattle baron's tenuous legal claim to the campsite . . . , Aubry and Foucault permitted the Acadians to remain on their new farmsteads; Grevemberg could console himself with a concession of 7.5 square leagues (18.75 square miles [30 sq km]) (Brasseaux 1987:92).

The Attakapas Acadians anticipated a reunion with other Acadian immigrants and they believed that a "New Acadia" would emerge at the Attakapas post. Insufficient support from the French colonial government, though, prevented other Acadians from settling in the Attakapas region. Out of necessity, a group that arrived in May of 1765 had to settle along the lower Mississippi coast, rather than in the Attakapas region (Brasseaux 1987:76-77).

By April of 1766, the Attakapas Acadians had dispersed into three or four settlements. The census of April 25, 1766, listed an estimated 150 inhabitants of the district: 16 households at the "District of the Pointe" (*Fausse Pointe*), 17 households on Bayou Tortue (*Côte Gelée*), 14 households at *La Manque* (probably positioned between present-day Breaux Bridge and Parks), and two households under the category "Allibamont Established at the Attakapas" (the "*Allibamont*," or *Alabamons*, were French nationals who left Fort Mobile in 1763 to escape British rule). This last "Allibamont" entry included Edouard Masse's 20 slaves, who, incidentally, were the only slaves recorded in the Attakapas District; the other 130 inhabitants were described as white settlers (Brasseaux 1987:94; Taylor 1980:16 fn.14; Voorhies 1973:124-125).

Nearly four years later, in early 1770, Don Eduardo Nugent and Don Juan Kelly journeyed through western Louisiana. Their report to the Spanish governor recorded a white population of 166 inhabitants within the Attakapas District. Additionally, the account listed 33 slaves, of whom 26 were at least 12 years of age and "able to work." The livestock included 1,323 oxen and bulls, 18 calves, 14 "carts with oxen", 266 horses and mares, and 565 pigs (Martin 1976:187, 191-192). The conclusion of the district survey noted:

This district is quite similar to the district of Opelousas with regard to pastures and food production [corn, rice, and sweet potatoes].

Considered as a whole, it stretches over twenty leagues of longitude by six of latitude with population scattered throughout the district.

The Attakapas are favored with a better situation. More lands are cleared [there] than in the Opelousas District. The Acadians have settled there and raised cattle. They are extremely industrious and eager to work. Their women weave cotton which they turn into excellent cloth. They use it to make clothes for everyone. They also make stockings and cloth which they use as linen, but they were discouraged from cultivating cotton and manufacturing it, not knowing if the government would permit them to do so (Martin 1976:192)

By 1774, the general census of the Attakapas region (October 30, 1774) listed 129 white adults and 194 white children, 12 free black adults and 6 free black children. In addition, 155 slaves were counted. The white inhabitants owned 5,208 head of cattle, 701 horses and mules, 1,126 pigs, and 96 sheep. The free blacks owned 87 head of cattle, 33 horses and mules, and 45 pigs (Voorhies 1973:280-283).

The preponderance of cattle reflects the economic importance of animal husbandry within the Attakapas region. Most of the Attakapas Acadians emigrated from the Chignecto region of Nova Scotia, "a sparsely wooded sea marsh and prairie that for half a century before the Grand Dérangement had supported small cattle ranches" (Brasseaux 1987:122). A description of the Chignecto beef economy concludes: "In view of their background, it is hardly surprising that the 1765 Acadian immigrants, whose leaders were drawn exclusively from the Chignecto Isthmus, selected

homesites in South Louisiana's prime grasslands and immediately engaged in ranching" (Brasseaux 1987:122). The Acadians were successful, and the size of their herds increased rapidly. In addition to raising cattle, the Attakapas Acadians also farmed enough corn, cotton, and vegetables to be self-sufficient (Brasseaux 1987:122-125).

As Acadian pioneers ventured up Bayou Teche in 1766, they established communities. A group of 44 Acadians settled at La Manque, just below present day Breaux Bridge. That same year, a second group of Acadian refugees advanced westward towards the Vermilion River. They settled at *Cote Gelee* on the western bank of Bayou Tortue, which, as the name implies, winds a tortuous course between Bayou Teche and the Vermilion River. *Cote Gelee* was located between the present day communities of Pilette and Broussard. The upper portion of the Vermilion River, however, discouraged settlement because its low banks had a tendency to flood. The lower Vermilion River proved to be much more popular. The settlers of *Cote Gelee* soon abandoned the site on Bayou Teche and relocated to the lower Vermilion River.

Many of the Acadians moved westward from their settlements along Bayou Teche to the Vermilion River. By 1777, approximately 12 families had migrated west to settle just north of present-day Lafayette. During the next year, an additional 18 or so Acadians settled farther south, between present-day Lafayette and Abbeville; however, settlement beyond the flood plain of the Vermilion River proceeded slowly since timber supplies in those areas were not adequate enough to sustain a settlement. Marin Mouton's land claim, situated on the western prairie of the lower Vermilion River, was the exception to this pattern (Brasseaux 1987:95-99).

A smaller southeastward migration of Acadians also occurred during the late 1770s as Acadian families moved to the vicinity of present-day Jeanerette in Iberia Parish. Due to the animosity exhibited by the local Creoles, though, several of the Acadian settlers of the *Chicot Noir* community moved westward in 1782 to join their countrymen along the central and lower Vermilion River (Brasseaux 1987:96).

The earliest settlers to occupy the area originated from the district of Chignecto in Nova

Scotia, where the Acadians had engaged successfully in cattle raising. These immigrants selected homes in the grasslands of Southwestern Louisiana where they again took up animal husbandry. In 1773, Acadian herdsman began the practice of driving cattle to market in New Orleans down the Collet Trail that ran parallel to Bayou Teche. The modern day Highway 90 follows its approximate route.

Although they first drove cattle for other colonial landowners, the Acadians soon developed their own herds of Beaubassin beef cattle. By the 1780s the Acadian ranchers had emerged as the predominate suppliers of beef for the Crescent City's slaughterhouses (Brasseaux 1987: 122-124).

In the late eighteenth century the Acadians of southwestern Louisiana concentrated on raising cattle rather than growing crops. Their agricultural efforts were intended for subsistence and home consumption rather than for commercial gain. As the ranchers raised more cattle they produced less corn, vegetables, and cotton (Brasseaux 1987: 125).

Acadian settlers in the prairies did not adopt slaveholding as quickly as their Acadian counterparts settled along the Mississippi River. Nevertheless, by 1785, about 10 percent of the Acadians in southwestern Louisiana held slaves. The number of slaveholders increased until 1810, when more than half of the Acadian families in the prairies owned bondsmen (Brasseaux 1987:192-197).

Throughout the Spanish era, the Attakapas region grew and prospered. In 1784, the American geographer Thomas Hutchins published the following account of the area:

All the Indians in this part of the country, consisting of several small tribes, do not exceed 100 families. The white people are about 400 families, and can raise 500 militia. The number of negroes are nearly equal to the whites.

Although this country might produce all the valuable articles raised in other parts of the globe, situated in the same latitudes, yet the inhabitants principally cultivate indigo, rice, tobacco, indian corn and some wheat; and they raise large stocks of black cattle, horses, mules, hogs, sheep and poultry. The sheep is said to be the sweetest mutton in the world. The black cattle, when fat enough for

sale, which they commonly are the year round, are driven across the country to New Orleans, where there is always a good market [sic throughout] (Hutchins 1784:48).

Land Claims within Vermilion Parish

In the area that forms present-day Vermilion Parish, land claims were clustered primarily along the Vermilion River. Some members of the Broussard family, descendants of one of the eight Acadian "Chieftains", had settled along the upper Vermilion River. On the lower Vermilion, most of the land grants were held by Americans, and French and English nationals. One large tract positioned near the mouth of the Vermilion River was composed of grants made to a New Orleans family — John Baptiste McCarty, his daughter and two sons. Land use throughout the region included harvesting timber, cattle grazing, and

farming. The Spanish colonial government apparently began granting land claims along the lower Vermilion River ca. 1780 (Vermilion Historical Society 1983:7-9).

In Vermilion Parish, the project area includes or borders land tracts originally claimed by Marin Mouton, John and Jesse White, Louis Delahoussaye, Pierre and Antoine Etier, and Catherine Bondin, the Widow Etier (Figure 10). One of these claimants, Marin Mouton, came from St. James Parish, where he was born in 1758. According to the militia rolls, Mouton lived within the Attakapas region by 1777, and by the early 1790s, he occupied the office of syndic (comparable to a Justice of the Peace) (Vermilion Historical Society 1983:234-235).

Mouton claimed 1,720 ha (4,251 ac) in Township 13S, Range 3E, on the western prairie of the Vermilion River, which he purchased from

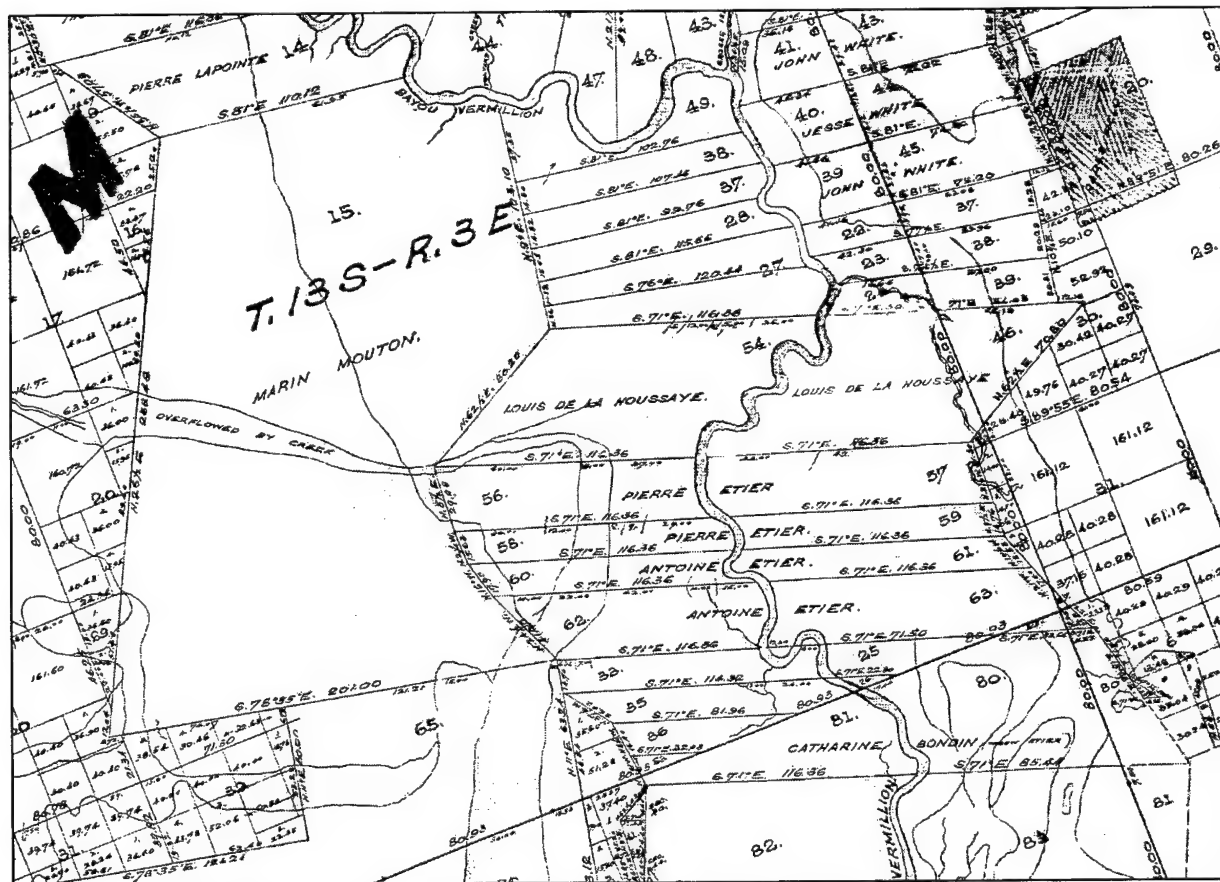


Figure 10. Manuscript Map of Calhoun Flunker, Surveyor General (1890), Showing Extracts from Township Maps of Vermilion, St. Mary, St. Martin, and Iberia Parishes. This Excerpt Shows the Claims of Mouton, Etier, and Delahoussaye Along the Vermilion River. Louisiana Collection, Tulane University.

the Attakapas Chief Bernard Medal in 1802. Witnesses who validated his claim testified that eight families had settled and made numerous improvements to the land: "... in a few months after going to work on the place, there were comfortable and necessary buildings erected, and a field enclosed with cypress pens; and that place has been cultivated from that time to the present [1811]" (Lowrie and Franklin 1834:3:143-144).

Depositions taken in support of Mouton's claim detailed the nature of the settlement, which apparently consisted of related households. It was typical of the Acadian settlers in the Attakapas to form communities of related families:

Michel Prevots [Prevost] ... ["hath deposed, that, twelve or thirteen years ago [ca.1800], the claimant settled on the land claimed, and has established the following persons on different parts of the same tract, to wit, Francois Hebert, having a wife and three children, Charles Boudoin, having a wife and one child, Marin Mouton, son of the claimant, having a wife and one child, the wives of Hebert and Boudoin, being the daughters of the claimant. That several other persons are also established on the tract of land in question, on separate portions sold and allotted to them by the said Marin, to wit, Pierre Boudin, having at present a wife and four children, Alphonso Boudoin, having, at present date, a wife and two children, Ambrose Stoots, having now a wife and two children, the widow of Andrew Lemaire, having five children; that Francois Hebert was established on the land at the same time of the original claimant; that the other persons have been subsequently established thereon, some of them about seven years ... The deponent further saith that he has always understood, and has reason to believe, that the said Marin Mouton made the purchase of this large tract of land at the request of some of the present proprietors, and with a view to form a compact settlement or neighborhood of persons, most of whom were connected in their families with each other" (Lowrie and Franklin 1834:3:143-144).

The area settled by Mouton presently is called Mouton Cove (Vermilion Historical Society 1983:15).

Territorial and Antebellum Eras

As part of the negotiations leading to the 1803 Louisiana Purchase, Spain restored western Louisiana to France, which shortly thereafter

conveyed the Louisiana Territory to the United States. On March 26, 1804, that portion of the Louisiana Purchase located below the thirty-third parallel was designated the Territory of Orleans. The following year, Orleans was partitioned into 12 counties, including the county of Attakapas, which encompassed the present-day parishes of Iberia, St. Mary, and Vermilion, most of Lafayette and St. Martin Parishes, and portions of Cameron and Iberville Parishes. In 1807, the territorial legislature reorganized the county system, further dividing the Territory of Orleans into 19 parishes. Attakapas County was superseded by the parish of St. Martin, which encompassed roughly the same territory as its predecessor. Originally (1807 - 1811), St. Martin Parish was bounded to the northwest by St. Landry Parish, to the southeast by La Fourche [sic] Parish, to the south by the Gulf of Mexico, and to the northeast by the western Mississippi River parishes of Baton Rouge, Iberville, Ascension, and Assumption. In 1811, southeastern St. Martin Parish was re-designated St. Mary Parish, which included Marsh Island and part of what later would become southern Iberia Parish (Figure 11). The following year, on April 30, 1812, the State of Louisiana was admitted to the Union (Bergerie 1962:14-15; Davis 1971:157-164, 167-169, 176; Goins and Caldwell 1995:41-42).

As a result of the Louisiana Purchase (1803), many changes occurred with the general area. The transition from Spanish to American ownership brought accelerated population growth and an increasingly diversified population. Americans eager to exploit the resources of the region migrated to southwestern Louisiana. The new immigrants preferred agriculture to cattle raising. By 1830, cotton and sugar cane cultivation replaced ranching as one of the chief rural enterprises.

After the Louisiana Purchase, southwestern Louisiana, underwent marked changes in terms of its political boundaries. The project area was encompassed by the newly created Attakapas County in 1805. Under the county government, such Anglo-American institutions such as jury trial, the English language, and the common law were introduced. Since the established inhabitants disliked these innovations, the legislative council soon replaced the county system with

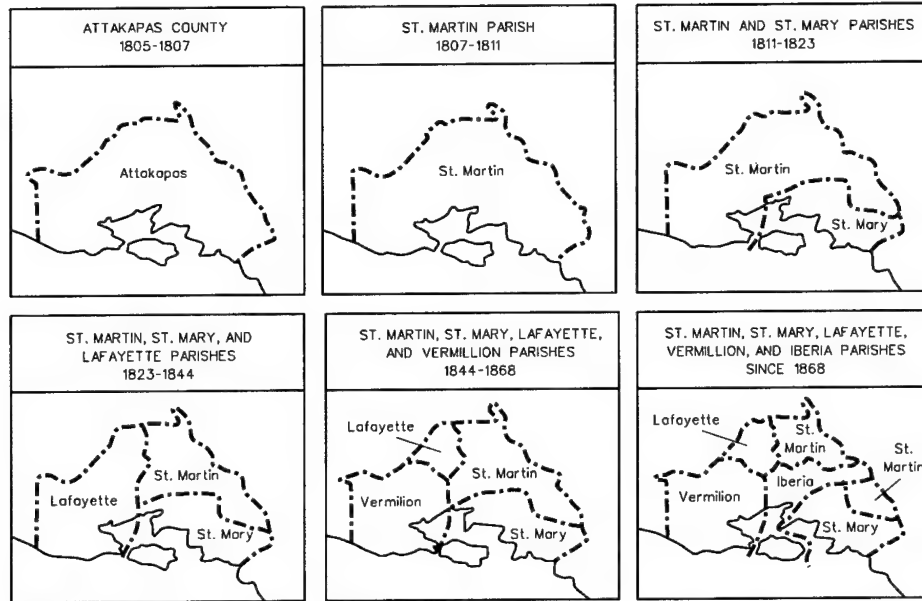


Figure 11. Ions of the Original Attakapas County, or St. Martin Parish, 1805-1868, Derived from St. Martin Development Board ca. 1850.

parish government. By this system, the territorial governor appointed a parish judge who held and exercised the combined powers of judge, county clerk, sheriff, coroner, and treasurer. With the justice of the peace and a jury of 12 inhabitants he made policy and administrative decisions affecting police, taxation, and public works.

In 1807, Attakapas Parish was renamed St. Martin Parish. Subsequent changes included the creation of Lafayette Parish in 1823 from the western part of St. Martin Parish. Its territory included present day Lafayette and Vermilion Parishes. A legislative act in 1844 excised the southwestern portion of Lafayette Parish to create Vermilion Parish (Griffin 1959:22-23).

Bayou Teche served as the primary route to the project region after the Louisiana Purchase. The Vermilion River emerged as a secondary route. Snags, however, made navigation on the Teche above New Iberia and along the entire route of the Vermilion difficult (Prichard et al. 1945: 823-824).

Barges continued to provide the chief means of transportation by water from the vicinity of the project area to the outside world. While moving downstream, the crew used poles

to guide the vessel as it drifted with the current. To move upstream, even on the sluggish Bayou Teche, a barge had to be drawn by ropes tied to slaves or horses walking along the shore. Travel was dangerous and only undertaken during the day.

Steamboats eventually plied the waters of the Vermilion River and the upper reaches of the Bayou Teche, but submerged logs and stumps continued to present constant obstacles. Between 1840 and 1850, the police jury of Lafayette Parish appropriated more than \$4,000.00 to remove obstructions in the Vermilion River. During low water, the Vermilion River could not be used, and on the upper Teche only the landing at Beaux Bridge was accessible to low draft vessels.

The overall project area was hampered by the lack of rail transportation during the antebellum period. In 1850, the New Orleans, Opelousas, and Great Western Railroad completed its tracks from New Orleans to what is now Morgan City (then called Brashear City). Plans called for the line to continue through New Iberia to Vermilionville (Lafayette). While some track had been laid, the line remained inoperable

to the west of Morgan City (Griffin 1959: 86-88).

As a substitute for rail support, the company dispatched the steamboats from Morgan City to carry freight and passengers up Bayou Teche. This important service was terminated during the Civil War with the Federal invasion. In 1862, United States troops seized the railroad's auxiliary fleet. The Federals thereafter used the vessels for military purposes (Griffin 1959: 86-88).

Cattle raising continued to prosper on the prairies of southwestern Louisiana through the first quarter of the nineteenth century. By 1827, cattle had registered more than 40 brands and identifying marks for livestock grazing in Lafayette Parish alone. Nevertheless, after 1830 ranching declined in relative economic importance; the prairie grasslands along the Vermilion River were plowed up and replaced with cotton and sugar cane. The agriculturists of the southwestern prairies only had modest sized farms when compared to the large sugar planters who occupied the Mississippi River and the cotton planters who farmed along the Red River (Menn 1964:259-260). Cotton and sugar cane predominated agriculture throughout southwestern Louisiana during the antebellum period; the popularity of rice increased after the Civil War (Griffin 1959: 105).

Few communities of any consequence were located in the immediate vicinity of the project area during the pre-Civil War era. Erath dates from the postbellum period (Pourciau 1985:144). Broussard, then known as Cote Gelee, consisted of a post office, some stores, and a few members of the Broussard, Bernard, Melancon, and Landry families (Edmonds 1979: 74). The town of Youngsville, originally called Royville, had its beginnings in 1831 when J.J. Roy took up land there. The town was laid out in 1839, members of the Roy, Landry, Dyer, and Young families settled the area. Population levels however, remained minuscule before the Civil War (Griffin 1959: 73-74).

By 1840, the community of Point BreauX contained a variety of enterprises. These included: general merchandise, hardware, and dry goods stores; millinery and apothecary shops; blacksmiths; and a baker. The town even had a few board sidewalks. The legislature of Louisi-

ana incorporated Pont BreauX or BreauX Bridge in 1859 (Pourciau 1985: 17).

In 1843, the town of Abbeville was founded by Father Antoine Desire Megret, a French born Capuchin missionary. He purchased \$900.00 worth of land from Joseph Leblanc and built St. Mary Magdalen Church in what is presently downtown Abbeville. In 1854, the town became the parish seat of Vermilion Parish (Vermilion Historical Society 1983).

Development of Sugar Plantations

Agriculture throughout the Attakapas, especially along the waterways, emerged as a dominant industry. The economy relied more and more on cane and cotton agriculture and in 1835, sugar cane surpassed cotton as the major cash crop for the region. The attraction of cane cultivation was enhanced after Etienne de Boré discovered a method of processing Louisiana cane into sugar (1796). Throughout Louisiana, planters scrambled to find new cash crops as indigo succumbed to crop disease. As long as it was protected by high tariffs, Louisiana sugar competed favorably within the domestic market. Throughout the antebellum era, sugar cultivation and processing dominated the south Louisiana economy; by 1850, approximately 1,500 sugar plantations were scattered throughout Louisiana (Kniffen and Hiliard 1988:136-137; Wall et al. 1984:156).

Gibson (1979) discusses the economy of cane, cotton, and corn cultivation in the Attakapas region. The author estimated that "first quality lands" yielded 3,000 pounds of sugar per arpent of land, and "second quality" lands yielded 2,500 pounds per arpent. Cotton yields on first quality lands were 1,000 pounds per arpent, while second quality lands yielded 800 pounds per arpent. Corn planted on first quality lands yielded 60 bushels per arpent; second quality lands yielded 40-50 bushels (Gibson 1979:106).

The substitution of sugar cane for cotton as a staple crop was facilitated by the protection accorded to domestic sugar by the Tariff of 1816 and the falling prices of cotton after the Panic of 1819. In the Attakapas region, the shift to sugar cane advanced briskly (Degelos 1892:65-68).

Before 1850, the majority of sugar planters were busy expanding and developing their holdings. Using borrowed capital, they purchased new lands and acquired plantations, slaves, and

equipment (Sitterson 1953:70). By the 1850s, though, the developmental phase had ended. The sugar plantation regime was firmly established, dominating the economy of those Louisiana parishes situated below the Red River.

During the antebellum era, sugar planters did not utilize centrally located mills or refineries. Every sugar cane plantation had to be both farm and factory, necessitating a sugar house for each plantation, regardless of size (Roland 1957:3). The capital outlay required for machinery made sugar production far more expensive than the production of cotton, which situation, of course, gave the large planter with available capital an advantage over his less affluent competitors. As a result, large plantations exercised a significant economic influence on the sugar industry.

Although not as prosperous as surrounding parishes, Vermilion parish experienced growth in sugar agriculture during the antebellum years. In 1828, there were only six sugar producers (with a total sugar crop of 169 hogsheads) recorded in Lafayette Parish, which included present-day Vermilion Parish at that time. A year later, the number of plantations had increased to 19, of which two were in the "planting" stage; the other 17 produced a total sugar crop of 434 hogsheads (Degelos 1892:67).

In 1844, there were 13 sugar planters operating along the Vermilion River. By far, the largest of these producers was Robert Cade, who came to Louisiana from South Carolina ca. 1820. Cade accumulated three plantations, one each in present-day Lafayette, St. Martin, and Vermilion Parishes. Although Cade did not live at his plantation in Vermilion Parish, it was one of only two plantations along the Vermilion River that contained a steam-powered sugar mill. Throughout the antebellum era, Cade was the most significant sugar producer in Vermilion Parish (Champomier 1844-1859; Vermilion Historical Society 1983:106).

By the time of the Civil War, the majority of the planters in the region had converted their sugar houses from horse to steam power (De Grummond 1949:44). The harvest then was measured in hogsheads. The contemporary chronicler of the sugar crop, Champomier, said in 1857 that "It is well known that our planters do not make hogsheads of the same size, and there is a wide margin in some of them;" nevertheless, he

estimated the average hogshead to contain 1,150 pounds of sugar (Champomier 1857:43).

The Civil War Era

A native of Lafayette, former Governor Alexandre Mouton, presided over the Louisiana convention of 1861 in which delegates voted overwhelmingly to secede from the Union. In April of 1862, New Orleans fell to the United States, and by the spring of 1863, General Nathaniel Banks was advancing up Bayou Teche towards the project area with over 20,000 Federal troops. A much smaller group of Confederates, commanded by General Nathaniel Brooks, contested the Federal advance. While the confederates fought effectively, they were forced to retreat.

An offshoot of the Teche Campaign was the Federal destruction of the Avery Salt Works on Petite Anse (now present day Avery) Island within present day Iberia Parish. Salt was of primary importance to the Confederacy. Although used as a seasoning and a chemical agent, it was vital for preserving meat, for maintaining healthy livestock, and for tanning leather. With the fall of New Orleans and the coastal blockade of Louisiana, the South lost its chief port for salt shipped from England, its major supplier (Lonn 1933:13-18; Raphael 1976:54). Southerners became so desperate for a meat preservative that "They were collecting salt by going into smokehouses and taking the drippings from the sides of pig and beef, using the dirt that absorbed those drippings and mixing it with water to put on the meat" (Schweid 1980:60).

The outbreak of the Civil War motivated Petite Anse Island landowner Judge Daniel D. Avery (son-in-law of John Marsh) to revive the salt operation to help support the Confederate cause. On May 4, 1862, John Marsh Avery, discovered an enormous vein of rock salt (the first such discovery in the continental United States) as his slaves were enlarging the brine springs. Judge Avery accelerated the development of the mine and contracted with various Southern states to provide them with salt. The Avery Salt Works produced an estimated 22,000,000 pounds of salt for the Confederacy between May of 1862 and mid-April of 1863 (Chisholm 1952:176-179; Lonn 1933:32-33; Meek and

Gulledge 1986:4; Raphael 1976:54-55; Winters 1963:232).

A Confederate report dated November 9, 1862, noted that defense measures should be taken regarding "the rich district bordering on the Teche, including the salt mines on Marsh Island, of incalculable value to the Confederacy" (U.S. Secretary of War [OR] 1886:15:175). (It should be noted that the fore-mentioned Marsh Island was, in fact, Petite Anse Island, which is now modern day Avery Island). The Federal command soon realized the importance of the Avery Salt Works to the Confederacy and set about employing measures, first, to stop the salt shipments and, finally, to end the salt-processing operations altogether. Although the Union blockade initially was a hindrance to salt transports from Petite Anse Island, Confederate forces quickly found a "back door" to their strongholds. From Bayou Teche, the salt shipments were conveyed to the Atchafalaya River, then over land to Alexandria and to the Red River, where they were loaded on steamboats for transport to the Mississippi River and on to Port Hudson, Vicksburg, and other Southern-held ports. In anticipation of a Union attack, defenses were placed both on Petite Anse Island and on Bayou Teche (Chisholm 1952:179; Hansen 1971:428; Lonn 1933:34; Raphael 1976:55-56).

In mid-November 1862, General Benjamin Butler ordered the destruction of the Avery Salt Works. As a result, two Union gunboats and a transport steamer approached Petite Anse Island from the Gulf of Mexico, through Vermilion Bay, and up Bayou Petite Anse. As soon as news of the Federal naval movement was reported, Confederate forces were dispatched from Camp Bisland on Bayou Teche to intercept the Federals. On November 21, Captain T. A. Faries' and his Louisiana Artillery engaged the enemy at the lower end of Petite Anse Island, within sight (but out of howitzer range) of the gunboats at the mouth of the bayou. The Federal forces retreated to their vessels and returned via their previous route. While the wind had aided their approach to Petite Anse Island, it worked against them during their retreat, creating a low tide that grounded the three boats for 15 to 20 days (Hansen 1971:428; OR 1886:15:1088; Raphael 1976:60-61).

Federal forces at last succeeded in destroying the Avery Salt Works on April 18, 1863. Colonel William K. Kimball arrived early that morning with his New England troops to discover that the Confederates had abandoned the facility (Raphael 1976:137; Winters 1963:232). In his report, Colonel Kimball described the scene as follows:

I . . . found the enemy had evacuated his works and removed his guns. I proceeded at once to destroy all the buildings, 18 in number, connected with the saltworks, steam-engines, windlasses, boilers, mining implements, and machinery of all kinds; also 600 barrels of salt, ready for shipment. About one ton of powder and one ton of nails, found in the magazine, I caused to be transported to New Iberia The bomb-proof magazine connected with the fortification I caused to be blown up and the works destroyed, so far as they could be with the means at my command (OR 1886:15:382).

As the structures went up in flames, the Federals flooded the salt mine and ruined the Avery sugar plantation and grounds (Meek and Gulledge 1986:4; Schweid 1980:60).

Following the destruction of the Avery Salt Works, the Federal commanders divided their army. One group of Union soldiers proceeded from New Iberia to the western shore of Spanish Lake and from there to the Vermilion River to the Pinhook Bridge, located below Vermilionville (modern day Lafayette). The other group of Union soldiers advanced to the east of Spanish Lake and up the western bank of Bayou Teche to St. Martinsville. From there the Union soldiers crossed over the Vermilion River and headed for Pinhook Bridge to reunite with the other soldiers.

On April 17, 1863, the Federal left, on a direct route from New Iberia to Vermilionville, arrived first at the Pinhook Bridge as General Taylor and the last of his supply wagons and Confederate troops crossed the Vermilion River (Edmonds 1979:83). As the last Confederate wagon crossed the bridge, Taylor ordered the bridge destroyed. After the Confederates set the bridge ablaze, they positioned their artillery and infantry around its upper approaches to engage the advancing Federal forces. The two armies struggled for about four hours with few casualties

on either side. When Taylor was satisfied that most of the Confederate troops and their wagon train had proceeded on to safety, the Confederate general disengaged his troops and withdrew his rear guard from the bridge.

The Federal army constructed a pontoon bridge the next day in order for their forces to pursue the retreating Confederates. While waiting on the construction of the bridge, almost half of the tired and dirty Federal troops stripped off their clothes and jumped into the river. Considerable confusion resulted when a group of Taylor's Confederate cavalry swooped down to the opposing bank and opened fire on the naked men. One observer described the scene:

Such a spectacle never before was seen. The long [drum] roll was sounding and naked men, in every direction, were making a dash for their guns, trying to dress as they ran. Some with their trousers on hind side before, don't know whether they were advancing or retreating (Raphael 1975:147, quoting [?] Irwin).

The invasion of the Teche in the spring of 1863 provided no strategic victory for the Federal cause. The army was withdrawn in the summer to besiege Port Hudson on the Mississippi River. In the Autumn of 1863, however, Federal troops once more advanced up the Teche., this time in an overland expedition intended to plant the United States Flag in Confederate Texas. The citizens of the Teche were dismayed by the return of the Federal troops. To be twice invaded inflicted especially severe hardship on the civilian population of the area.

At New Iberia, the Federal invasion force took the stagecoach road across the prairies to Vermilionville. On October 9, 1863, as the Federal troops approached the Pinhook Bridge over the Vermilion, they found the span ablaze once more. The bridge had been rebuilt after its burning in the spring, but the Confederates once again destroyed it to slow the advancing Federals. At 11 a.m. the Federal forces attacked and a skirmish ensued (Edmonds 1979:83) (Figure 12).

According to one Confederate from Texas, "We withdrew in brisk fashion" (Edmonds 1979: 86). In the engagement, the Federals secured a bloodless victory for the Union. They

once again rebuilt the destroyed Pinhook Bridge with a temporary span (Edmonds 1979: 90). The Federal army then pursued the Confederates to Opelousas, which the Union forces occupied till the end of October (Winters 1963: 297-298).

The project region remained relatively quiet through the end of the Civil War. In early 1865, a few reports were made regarding possible blockade running out of Vermilion Bay and Cote Blanche Bay, but there was no significant activity noted by either Confederate or Federal officers monitoring the region (*OR* 1896:48[1]:722, 1441).

Postbellum Era

The years following the end of the Civil War were difficult for southern Louisiana. The economy throughout the state had been destroyed; plantations and farms, railroads and levees, businesses and homes all had been affected by the war, physically and financially. The postbellum period proved to be an era of recovery for the entire state.

The emancipation of the slaves, which accompanied Federal victory, not only severely impacted the labor supply but also eliminated the millions of dollars planters in the region had invested in human bondage. According to one authority, abolition swept away one-third of Louisiana's wealth (Winters 1963:428).

As a result of the war, the established planters found themselves without either capital or labor. Furthermore, war severely disrupted both the transportation system and the market for sugar. The planters found themselves without influence in state and national affairs at the beginning of the postbellum era (Broussard and Broussard 1955:17).

Besides repairing the considerable physical damage to their holdings, sugar planters in the region who wished to resume operations had to deal for the first time with a labor supply that was not enslaved. Before labor could be hired, many obstacles had to be overcome, not least of which was the complete lack of trust exhibited on both sides in the bargaining. Nevertheless, by 1869, planters in the area were hiring workers at \$15.00 to \$20.00 a month for first class hands, with cabin, rations, and wood included in the bargain (Sitterson 1953:244). As might be expected, the cabins, originally slave quarters, were insubstan-

tial structures, e.g., William T. Palfrey had hired a carpenter to build some structures at Ricohoc in the 1850s for \$25.00 each (Sitterson 1953:67).

In 1869, when Bouchereau resumed the chronicle of the sugar crops that Champomier had written during the antebellum period, only a few plantations were operating in the region (Bouchereau 1869). As a result of financial difficulties, many planters lost their estates. After the war, the industry was slow to recover from the disruption it had suffered. A pervasive lack of capital impeded the revitalization of the industry. Planters could not afford to rebuild their sugar houses, nor could they repair the levees that had been neglected during the war years. Without the proper levees, many former sugar plantations were inundated during high water. In addition, the loss of slave labor further encumbered economic recovery. Many former slaves migrated north, and those who stayed were regarded as unreliable; they were perceived by the white population as a political threat. L.

Bouchereau noted that "not more than two out of every twenty sugar planters have a full complement of laborers" (1868-1869:vii).

These fundamental obstacles necessitated great changes in the sugar industry. Since most planters lacked both the capital and the laborers to manufacture sugar, a new method was proposed by Bouchereau in 1874. He urged that the agricultural and industrial aspects of sugar production be separated. His proposal, the "Central Factory System," included centralized mills to serve the needs of many planters: "Let the sugar factories be established in different neighborhoods and let the producers of the cane sell it to the factory" (Bouchereau and Bouchereau 1874:xii-xiii).

In this way, the increased labor costs could be absorbed by the savings on mill processing and manufacturing. The system also allowed smaller farmers to participate in the sugar cane cultivation; impoverished farmers were able to grow small tracts of sugar cane to sell to the fac-

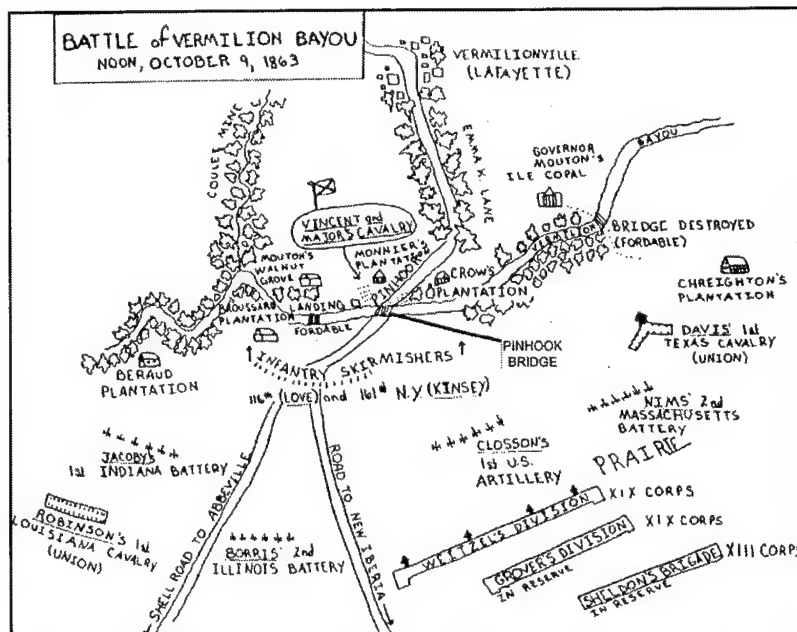


Figure 12. Illustration of the Battle of Vermilion Bayou Depicting the Location of Pinhook Bridge. From the *Journal of Louisiana History* II P320: "Military Events in Louisiana During the Civil War 1861-1865" By Allen W. Jones (1961).

tory. Under the antebellum plantation system, small scale production had been an economic impossibility.

Rice cultivation became a viable alternative to the high cost of sugar cane production for many planters. In 1877, Bouchereau wrote: "Many of the sugar plantations are planted in rice for want of the necessary means to rebuild or repair sugar houses, etc., while others are only partially cultivated owing to the encroachment of water from crevasses, and many are completely abandoned on account of overflow" (Bouchereau and Bouchereau 1877-78:XX). Rice was a more appropriate crop for the neglected postbellum plantations since inundation, although harmful to the growth of sugar cane, was necessary for rice cultivation. Rice agriculture was also much less labor intensive than sugar cane cultivation, an added incentive to landowners facing a labor shortage (Goodwin et al. 1988).

The Twentieth Century

The period from 1880 to 1910 was an era of consolidation. By 1880, the sugar plantation regime had recovered from the effects of the Civil War, and the chronicler (Bouchereau) of the sugar crop no longer felt it necessary to compare annual crops with the pre-invasion yield of 1862. During these years, there also was a change in the old antebellum system whereby each plantation was designated a factory as well as a farm. The development of large processing plants made it uneconomical and unnecessary for each plantation to maintain its own sugar house.

After the Civil War, Vermilion parish was included in an area touted in promotional literature as the "Rice Belt". In the 1880s Seaman A. Knapp, president of the Iowa Agricultural College, initiated a study of thousands of acres in southwest Louisiana that had been acquired by a group of British companies. He reported that the area between Lafayette and Lake Charles was ideal for rice cultivation. The companies arranged for hundreds of farmers from the Midwest to purchase land in the area, creating a major influx of immigrants and a new cash crop for the state. (Wilds et al. 1996). As was the case with sugar production, new methods in rice cultivation helped to establish rice as an important crop. In the 1880s agriculturists from outside the South

introduced into southwestern Louisiana new methods of rice cultivation, including the use of machinery such as twine-binders, threshers, and mowers. According to one source: "Under the impetus of the profits made by rice growers, a rice craze seized upon southwestern Louisiana...Two years ago (ca. 1890) there were but 12,000 acres in rice in that section of the state. Today the acreage is 179,900" (Goodspeed 1992:211).

By 1900 more than half of the rice grown in the United States was produced in Louisiana. Accompanying this "rice revolution" was the construction throughout the rice producing parishes of irrigation canals that were fed by water pumping stations. Canal companies owned the pumping equipment. In exchange for raising levees to build the canals and for their other services, the companies shared in the profits of the rice crop. A partial list of canals and pumping plants published in 1904 included six plant to be constructed in the vicinity of Abbeville, in Vermilion Parish. The six plants already in operation irrigated a total of 52,800 acres. In addition, in the five year period before 1904, the "Rice Belt" region of Louisiana reportedly built approximately 25 rice cleaning mills (Southern Pacific 1904).

A severe decline in sugar production occurred in the years after 1911, and in the 1920s, the sugar industry was confronted with extinction. Bad weather contributed to the troubles of the planter. In 1911, there were severe early frosts, and in 1912, floods damaged crops. Furthermore, plant disease, particularly mosaic, swept through the canefields with devastating effect. Another problem was the higher cost of labor, especially after the wartime economy offered better paying jobs to canefield workers. Prices for sugar were unusually low, and the new Democratic administration of Woodrow Wilson in Washington, actually passed a bill that abolished the tariff on sugar.

The world war brightened the outlook of sugar planters temporarily. Congress repealed the free sugar bill, and an international shortage raised sugar prices to the highest level since 1889. Furthermore, in 1916, Louisiana planters produced a bountiful crop. Nevertheless, the federal government issued wartime controls that limited profits during the conflict.

After the removal of governmental controls, the sugar market entered a period of chaos. The expectation was that the price of sugar would rise on the world market. Instead, it collapsed and caught planters, manufacturers, and bankers by surprise. Louisiana sugar planters and manufacturers entered the 1920s in a severe depression from which many of them would not recover.

This economic decline increased the movement toward consolidation of sugar factories, but at the same time brought about a counter-movement in the breakup of large cane plantations. Some plantations were abandoned, while others were subdivided into smaller holdings (Sitterson 1953:343-360). Nevertheless, a long agricultural depression in the 1920s was followed by an international economic crisis in October 1929 and a decade-long worldwide depression.

Nothing testifies to the decline of the old order in Louisiana agriculture than the gradual adaptation to new economic markets. Soybean cultivation was introduced to the state around 1920 and its popularity soared as farmers came to value the crop's relatively low risk cultivation and as researchers discovered new uses for soybean products. In the late twentieth century, soybeans surpassed sugar cane and cotton to become Louisiana's highest earning field crop (Wilds et al. 1991).

While Louisiana farmers reaped profits from their crops, Louisiana fishermen netted earning from the Gulf of Mexico and the state's inland waters and coastal marshes. In 1990 the catch of fish brought in 275 million dollars. Nearly three quarters of that amount was accounted for by shellfish -- especially shrimp, of which Louisiana, with a large portion harvested by the fishermen of Vermilion parish, is the nation's leading producer.

For all the wealth produced from the states farmlands and waters, still far greater riches lay beneath them. In 1860, with the Civil War approaching, a study concluded that Louisiana could furnish enough oil from Calcasieu parish alone to meet the need of the Confederacy; however, no effort was made to begin production at that time. In 1866, the state's first well turned out to be a dry hole. In 1870, a watchman's lantern set fire to gas escaping from a newly drilled water well near Shreveport. This gas was later

used for illumination in nearby residences and business places. In 1893, Anthony Lucas began prospecting for oil in Southwest Louisiana. After several failures, he moved his operation to Texas. In January of 1901 he discovered the legendary Spindletop field. The discovery of oil and gas generated the kind of excitement that marked the gold rushes in California and Alaska and the frantic searches for oil and gas in Texas, Louisiana, and Oklahoma. Widespread exploration in north Louisiana began in 1902 and confirmed the existence of rich fields, but production was stymied at first by the eruption of gas from almost every new well. The value of natural gas as a fuel was not appreciated in the early days, and billions of cubic feet were wasted and allowed to escape into the air. One well spewed gas for three years before it could be controlled. Meanwhile, successful oil strikes brought on epidemics of prospecting fever and overnight booms to Louisiana. In the 1920s and 1930s, five-sixths of the oil taken from Louisiana came from the northern portion of the state (Wilds et al 1996). However, while production in south Louisiana was not of the same magnitude as northern Louisiana, oil production skyrocketed from 1925 to 1935. In 1925, 3,688,799 barrels of oil were produced in the area. By 1935, this number rose to 40,657, 131 barrels (Louisiana Editors Association 1936).

In order for south Louisiana to dominate the oil and gas industry the oil companies had to develop drilling rigs and production platforms that could be used in the coastal marshes and offshore in the Gulf of Mexico. In the early 1930s the Texas Company acquired the rights to a submersible drilling barge developed by Luis Giliasso. The craft could be towed to a location, filled with water, and sunk to the bottom to provide a stable platform for drilling. By 1937 a drilling structure utilized this technology and was placed in the open Gulf. In 1938 a well in fourteen feet of water on the coast brought forth crude. By this time seismic tests made it evident that vast deposits lay beneath the outer continental shelf in the Gulf, and after the Second World War the price of oil and the demand justified offshore exploration, which is far more expensive than drilling on solid land. On November 4, 1947, oil was hit by the first true offshore drilling well. As operations extended into the ever

deeper waters in the 1950s and 1960s, the submergible barges were no longer adequate, and companies invested many millions of dollars in colossal structures with legs that rest on the sea bottom and support platforms high above the waves. By the 1960s and 1970s many scores of structures stood in the Gulf of Louisiana (Wilds et al. 1996).

These platforms were the catalyst for the expansion of varying industries within the coastal parishes, including Vermilion. For instance, the platforms brought a boom in deep-sea fishing because many large species schooled around the underwater legs. In addition, the servicing of the platforms became big business, with great fleets of helicopters and crew boats needed to ferry crews to and from land, and to evacuate the rigs whenever a hurricane threatened (Wilds et al. 1996). In addition, plants designed to process oil and gas were attracted to Vermilion Parish. In 1972 the Columbia Gulf Transmission Company separation and dehydration facility began operations. At the time of its construction, this plant was the largest plat of its type in the United States (Vermilion Historical Society 1983: 424)

Oil brought unprecedented prosperity to the coastal Parishes, such as Vermilion. By 1985, seven billion barrel of crude oil and condensate had been extracted from the outer continental shelf, and 93 percent of that had come from the area off Louisiana. Production of natural gas totaled 84 trillion cubic feet, of which 92 percent was from the waters off the state. Louisiana was fourth to Texas, Alaska, and California in the pumping of oil products, and second to Texas in gas. In 1985 the total employment in all industries in the state was 1,543,381. Of these workers, 79, 097 were employed in the oil and gas exploration and production, 12,595 in oil refining, 25,538 in chemical operations having a basis in petroleum, and 1,141 in operating oil pipelines. As impressive as the statistics may seem, in reality, Louisiana was in the throes of a devastating "oil bust" in 1985, from which it never fully recovered. Louisiana's oil production, which peaked at 907 million barrels in 1970, was barely half that in 1985, and declined to only 148 million barrels in 1990. The drilling of new wells was minimal. Gas production also fell, although not so dramatically. Revenues

from oil and gas taxes and royalties -- which in the lush years covered a large portion of the state's budget -- plummeted, leading to a long series of financial crises. Nor was the outlook overly encouraging. According to some geologists' estimates, by the year 2000, oil reserves in Louisiana will be depleted by 89 to 97 percent, gas by 81 to 90 percent. Although known reserves are being depleted, new fields are waiting to be discovered, especially offshore in the depths that can be reached with modern equipment (Wilds et al. 1996).

Wildlife Refuge in Vermilion Parish

Edward McIlhenny was one of the nation's early conservationists, and many consider him to be the founder of the wildlife refuge program for the state of Louisiana. Edward Avery McIlhenny was the grandson of Judge Daniel Avery of the Avery Salt Works. By the early twentieth century, Edward McIlhenny had become well known as a naturalist, botanist, ornithologist, and writer. His experiences included the study of migratory birds as part of an 1893 Arctic expedition, the collection of flora from exotic locales for his Avery Island gardens, and the creation of an immense sanctuary on the family property for the endangered snowy egret. McIlhenny's spectacular gardens and "Bird City" exist on Avery island to the present day, while his scientific writings, based on observations of wildlife ranging from boat-tailed grackles to alligators, remain well-respected in the zoological realm (Hallowell 1979:26-29; Iberia Parish Library n.d.:19; Meek and Gullege 1986:4-5, 28, 51-52; Schweid 1980:59-63).

Ned McIlhenny's first large-scale marsh refuge endeavor began ca. 1910, with the considerable financial aid of Charles Willis Ward, on the Vermilion Parish acreage that became known as the Louisiana State Wild Life Sanctuary. That preserve was "the first wild life refuge in the world, privately donated, for the public good" (Louisiana Department of Conservation [LDC] 1933:255). Today, the sanctuary is called the State Wildlife Refuge and it covers 13,000 ac (5,261 ha) of the brackish marsh located on the western side of Vermilion Bay (Iberia Parish Library n.d.:19; Louisiana Department of Wildlife and Fisheries [LDWF] 1997:21).

Discussion

The history of Bayou Schooner has been affected by the evolution of the Attakapas district. The preceding historical overview detailed the changing cultural process and patterns of colonization that shaped the development of the area. These influences can still be witnessed today, as the 1990 census illustrates. Approximately 45 percent of Vermilion Parish's 50,000 residents listed Cajun or Acadian first in response to an ancestry question. Another 17 percent listed reported their ancestry as French or French-Canadian. By contrast, just 2 percent list English ancestry. Vermilion Parish has the largest Cajun population within the state of Louisiana (United States Census 1990).

Since the advent of the historical period in Louisiana, the Attakapas district has witnessed dramatic changes. The people who settled in the study area developed their communities in accordance with the changing environment. This unique landscape provided a setting for the development of distinct cultural trends and adaptive local economies. Changing agricultural patterns and the development of new industries has allowed Vermilion Parish to prosper.

The world war brightened the outlook of sugar planters temporarily. Congress repealed the free sugar bill, and an international shortage raised sugar prices to their highest levels since 1889. Furthermore, in 1916, Louisiana planters produced a bountiful crop. Nevertheless, the federal government issued wartime controls that limited profits during the conflict.

After the removal of governmental controls, the sugar market entered a period of chaos. The expectation was that the price of sugar would rise on the world market. Instead, it collapsed and caught planters, manufacturers, and bankers by surprise. Louisiana sugar planters and manufacturers entered the 1920s in a severe depression from which many of them would not recover.

This economic decline increased the movement toward consolidation of sugar factories, but at the same time brought about a counter-movement in the breakup of large cane plantations. Some plantations were abandoned, while others were subdivided into smaller holdings (Sitterson 1953:343-360). Nevertheless, a long agricultural depression in the 1920s was followed by an international economic crisis in October 1929 and a decade-long worldwide depression.

CHAPTER V

PREVIOUS INVESTIGATIONS

Introduction

The present chapter provides background information concerning previous archeological and architectural investigations completed within the general vicinity of the currently proposed Schooner Bayou project item. The information contained in this review was based on a background search of data currently on file at the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Divisions of Archaeology and Historic Preservation, in Baton Rouge. This information was gathered to ensure that all previously recorded cultural resources situated within the immediate vicinity of the current study area were relocated during fieldwork. In addition, it provides data on the nature and distribution of those previously recorded cultural resources located in the general vicinity of the proposed project corridor. This discussion is divided into four sections. The first includes a review of all cultural resources investigations

completed within 8 km (5 mi) of the proposed Schooner Bayou project item. The second section identifies those previously recorded archeological sites located within 1.6 km (1 mi) of the study area. This is followed by a description of previously recorded standing structures located within 1.6 km (1 mi) of the project area. Finally, this document contains a review of information contained within *A Database of Louisiana Shipwrecks* (Clune and Wheeler 1991).

Previously Conducted Cultural Resources Investigations within 8 km (5 mi) of the Currently Proposed Schooner Bayou Project Item

A total of three previously completed cultural resources investigations were identified within 8 km (5 mi) of the currently proposed Schooner Bayou project corridor (Table 9). These investigations resulted in the identification of 200 archeological sites; however, none of these archeological sites were identified within 1.6 km

Table 9. Cultural resources investigations completed within 8 km (5 mi) of the currently proposed Schooner Bayou project item.

FIELD DATE	REPORT NUMBER	TITLE/AUTHOR	INVESTIGATION METHODS	RESULTS AND RECOMMENDATIONS
VERMILION PARISH				
1975	22-84	<i>Archaeological Survey of the Vermilion Lock Replacement, Louisiana</i> (Neuman 1975)	Records review and helicopter survey	No cultural resources were identified; no additional testing was recommended.
1988	22-1357	<i>Evaluation of the National Register Eligibility of the Vermilion Lock, Vermilion Parish, Louisiana</i> (Treffinger 1988)	Records review and pedestrian survey	The Vermilion Lock was assessed as not significant. In addition, seven structures associated with the lock also were assessed as not significant.
MULTIPLE PARISHES				
1975	22-106	<i>Archeological Investigations Along the Gulf Intracoastal Waterway: Coastal Louisiana Area</i> (Gagliano et al. 1975)	Records review, boat survey, and limited pedestrian survey	Identified 158 prehistoric sites and 42 historic sites. Of these, 136 sites were assessed as significant while the significance of the remaining sites was unknown. Various levels of testing were recommended for the identified sites.

(1 mi) of the currently proposed project area. These three surveys are discussed in chronological order and by parish below.

Vermilion Parish

On February 14, 1975, Robert Neuman conducted a Phase I cultural resources survey and archeological inventory of the Vermilion Lock area, prior to the proposed replacement of the structure (Neuman 1975). The Area of Potential Effect was located adjacent to the Intracoastal Waterway, i.e., approximately 2.9 km (1.8 mi) west of the Vermilion River in Vermilion Parish, Louisiana. Neuman (1975) did not report the size of the area he examined, however, a helicopter survey of the proposed project area failed to identify any cultural resources. No additional testing of the proposed Vermilion Lock replacement area was recommended.

During 1988, the Museum of Geoscience, Louisiana State University, in Baton Rouge, conducted a National Register of Historic Places eligibility assessment of the Vermilion Lock (Treffinger 1988). The assessment was conducted on behalf of the U.S. Army Corps of Engineers, New Orleans District. Treffinger (1988) notes that the lock was constructed in 1933 and that it measured 17.1 m (56 ft) in width and approximately 360.3 m (1,182 ft) in length. In addition, a pedestrian survey of the overall area resulted in the identification of seven associated structures. Treffinger (1988) notes that the buildings represented the remains of 12 structures associated with the Vermilion Lock complex. None of these structures possessed the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional recordation of these structural remains was recommended. Treffinger (1988) assessed the Vermilion Lock as not significant applying the same National Register of Historic Places criteria. No additional recordation of the Vermilion Lock was recommended.

Multiple Parishes

In June 1975, Coastal Environments, Inc., performed an archeological investigation of the Gulf Intracoastal Waterway at the request of the U.S. Army Corps of Engineers, New Orleans District (Gagliano et al. 1975). The survey con-

sisted of a pedestrian survey of an approximately 60 m (200 ft) wide corridor that extended for 504 km (315 mi) along the length of the Gulf Intracoastal Waterway and selected spurs situated at various bayou crossings. As a result of this investigation, 158 prehistoric and 42 historic period sites were identified. Of the 158 prehistoric period sites recorded, 78 were found as exposures positioned along the banks of the waterway or in adjacent spoil disposal piles. Since the Gulf Intracoastal Waterway already had been constructed at the time of survey, Gagliano et al. (1975) provided treatment plans for the site they identified, and these were based on the significance and the relative degree of damage expected at each cultural resource locus. Only five of the sites (16CM20, 16JE36, 16JE56, 16OR57, and 16OR58) were assessed as "very important" and immediate salvage excavation was recommended. An additional nine sites (16CU19, 16IB112, 16IV4, 16LF36, 16LF78, 16SM6, 16SM14, 16SMY19, and 16SMY132) were characterized as "important" and shovel testing throughout each of these areas was recommended. A majority of the sites (16AS19, 16AS20, 16CU15, 16CU125, 16CU126, 16CM58, 16CM75, 16CM77, 16CM78, 16IB110, 16IB111, 16JE53 - 16JE55, 16LF75 - 16LF77, 16LF79 - 16LF81, 16OR41, 16OR53, 16OR55, 16SMY44, 16SMY125 - 16SMY130, 16SMY134, 16TR62, 16TR84, 16TR87, 16VM33, and 16VM35 - 16VM37) identified by Gagliano et al. (1975) were assessed as "moderately important," and limited testing was recommended, but only if the width of the waterway was expanded. None of the sites identified by Gagliano et al. (1975) are located within 1.6 km (1 mi) of the currently proposed project area.

Previously Recorded Archeological Sites Located within 1.6 km (1 mi) of the Currently Proposed Schooner Bayou Project Area

A review of the site files maintained by the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Archaeology, in Baton Rouge, failed to identify any previously recorded archeological sites located within 1.6 km (1 mi) of the currently proposed Schooner Bayou project corridor.

Previously Recorded Standing Structures Located within 1.6 km (1 mi) of the Currently Proposed Schooner Bayou Project Area

A review of the standing structure files maintained by the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Historic Preservation, failed to identify any previously recorded standing structures within 1.6 km (1 mi) of the currently proposed Schooner Bayou project item.

Previously Recorded Shipwrecks Located within 1.6 km (1 mi) of the Currently Proposed Schooner Bayou Project Area

As a part of this investigation, *A Database of Louisiana Shipwrecks* (Clune and Wheeler 1991), housed at the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Archaeology, was examined. This examination failed to identify any vessels that had been lost within 1.6 km (1 mi) of the currently proposed Schooner Bayou project area.

CHAPTER VI

FIELD METHODOLOGY

Introduction

This chapter describes the research design and field methodologies used to complete the Phase I cultural resources survey and archeological inventory of the proposed Schooner Bayou project item. It also includes information pertaining to the curation of all records, photographs, and field notes generated as a result of this investigation.

Project Description

The U.S. Army Corps of Engineers, New Orleans District, plans to stabilize approximately 1.6 km (1 mi) of bankline of the North Prong of Schooner Bayou in the vicinity of the Schooner Bayou Control Structure, in Vermilion Parish, Louisiana. This undertaking entails construction of a rock dike in the shallow waters adjacent to the existing left descending bankline. The dike, as currently designed, consists of crushed and armor stone, and it measures approximately 10.7 m (35 ft) in width at its base. In anticipation of this undertaking, a Phase I cultural resources survey and archeological inventory was conducted along the left-descending bank of the North Prong for a length of 2.2 km (1.4 mi) (Figure 13).

Research Design

The current investigation incorporated background research across a broadly defined study area as well as Phase I cultural resources survey and archeological inventory of the project area, situated on the east bank of the North Prong. Background research was undertaken to collect data on the natural, prehistoric, and historic settings of the project area. In addition, all previously conducted archeological surveys within 8

km (5 mi) of the proposed project area, as well as the distribution of previously identified archeological sites, historic standing structures, and National Register of Historic Places properties located within 1.6 km (1 mi) of the proposed project area were identified. Following the completion of the background research, a comprehensive cultural resources survey was undertaken. The Phase I cultural resources survey and archeological inventory of the proposed Schooner Bayou Bankline Stabilization Project area was designed to identify and to evaluate all cultural resources (archeological sites, cultural resources loci, standing structures, cemeteries, and traditional cultural properties) situated within the Areas of Potential Effect. Fieldwork consisted of pedestrian survey augmented with systematic shovel and judgmental auger testing throughout the limits of each project item.

The overall project area is located in the Chenier Deltaic Plain, a region characterized by fairly level topography that varies in elevation from only 1.5 to 3.0 m (5 to 10 ft) NGVD. The east bank of the North Prong can be characterized as a narrow strip of occasional natural levee deposits. Geological data indicate that these natural levee deposits are underlain by backswamp deposits and that these deposits date from late in the Holocene epoch. Therefore, it was anticipated that only sites dating from the late prehistoric or historic periods might be encountered. The overall probability of encountering cultural resources was high, especially along the natural levees.

A review of the published soil survey data for Vermilion Parish, Louisiana, was conducted (Murphy and Libersat 1996). This review indicated that the entire project area contained soils

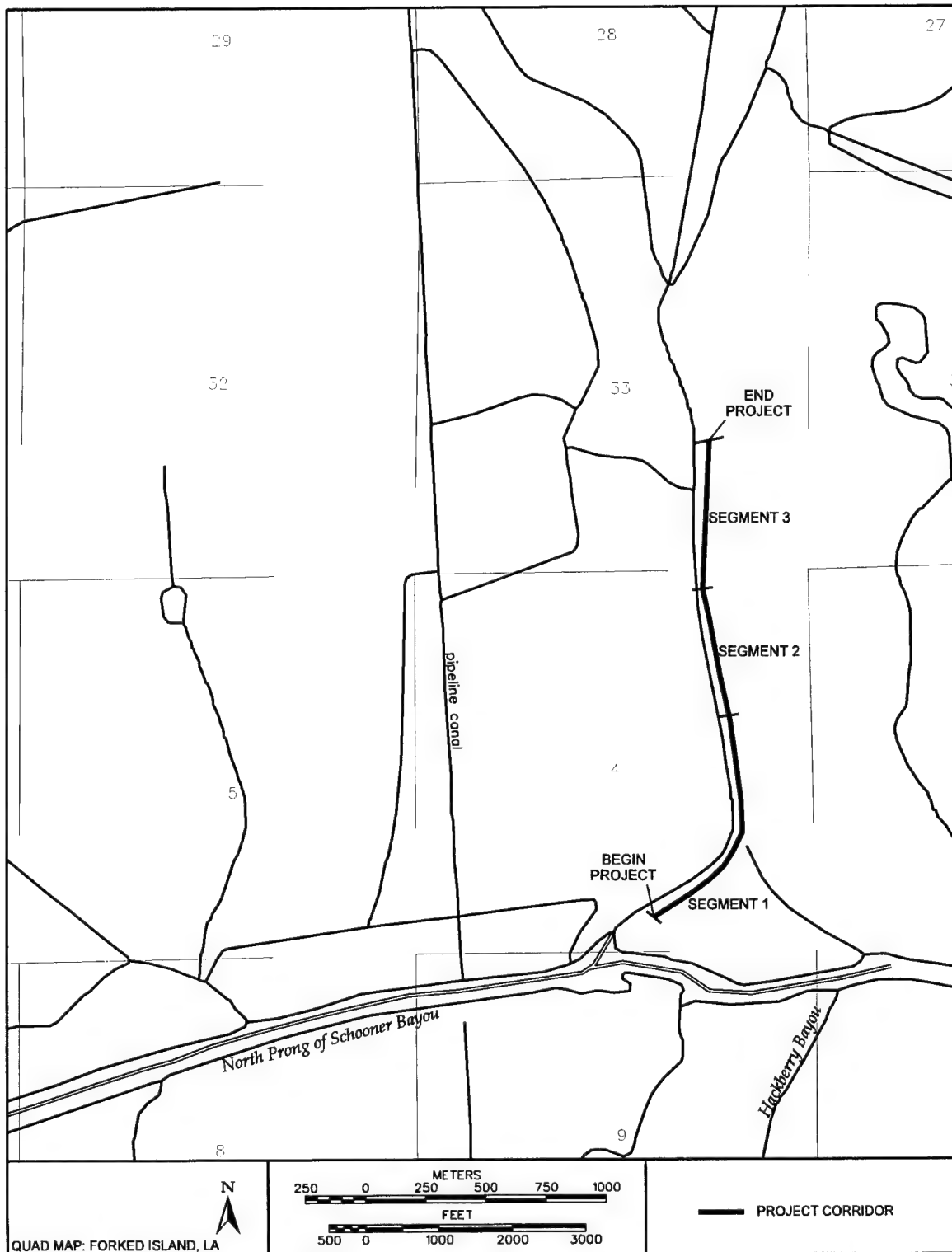


Figure 13. Excerpt from the 1979 Forked Island, LA digital 7.5' series topographic quadrangle, depicting the entire study area, previously recorded archeological sites and standing structures.

identified as Allemands mucky peat. These are very poorly drained, clayey soils that typically occur on nearly level land located within freshwater marshes. Allemands organic soils are formed from decomposing herbaceous materials. These soils are flooded most of the year, and the water table fluctuates from the ground surface to approximately 0.2 m (0.5 ft) below surface. A review of the soil survey data suggested that the water table within the survey area was high. For this reason, auger testing was used to supplement shovel tests that might have become too inundated to excavate.

Field Methodology

The field methods used to complete this investigation were designed to provide complete and thorough coverage of the entire Schooner Bayou Bankline Stabilization Project area. Fieldwork consisted of boat/pedestrian survey augmented by systematic shovel and judgmental auger testing along a single transect oriented parallel to the existing eastern bankline. Auger testing supplemented shovel testing where possible in an effort to identify any evidence of deeply buried intact cultural deposits. In addition, this work included an architectural evaluation of all standing structures older than 50 years in age identified during survey of the project area. No cultural resources or historic period standing structures, however, were identified as a result of this investigation.

Shovel Testing

Shovel tests were excavated at 25 m (82 ft) intervals along a single survey transect that traversed the entire length of the proposed project corridor. During survey, 89 of the 90 (98.9 percent) planned shovel tests were excavated successfully throughout the Area of Potential Effect. A single shovel test was not excavated due to inundation of the area. Each shovel test measured approximately 30 cm (11.8 in) in diameter, and each was excavated to a minimum depth of 50 cm (19.7 in). All shovel test fill was screened through 0.64 cm (0.25 in) hardware cloth; extremely wet soils and clay were hand-sifted, troweled, and examined visually for cultural material. Each shovel test was excavated in 10 cm (3.9 in) artificial levels within natural strata, and

the fill from each level was screened separately. Munsell Soil Color Charts were used to record soil color; texture and other identifiable characteristics also were recorded using standard soils nomenclature. All shovel tests were backfilled immediately upon completion of the archeological recordation process.

Auger Testing

In addition, 35 auger tests were excavated during this investigation of the proposed project corridor. Each auger test was excavated by hand using a 6.35 cm (2.5 in) diameter Dutch auger, and each test was placed at the base of selected shovel tests to extend subsurface testing to an approximate depth of 2 m (6.6 ft) below surface. Auger testing was conducted whenever possible; generally, those shovel tests that were not auger tested were terminated because of the presence of thick root masses. Stratigraphic soil profiles were recorded for all auger tests and the fill from each auger test was either screened through 0.64 cm (0.25 in) hardware cloth or hand-sifted, troweled, and examined visually for cultural material. Munsell Soil Color Charts were used to record soil color; texture and other identifiable characteristics were recorded using standard soils nomenclature. All auger tests were immediately backfilled upon completion of the archeological recordation process.

Architectural Review and Standing Structures Recordation

As a part of this Phase I cultural resources assessment, survey crews were instructed to record all historic period standing structures located within or immediately adjacent to the proposed project corridor. Since the proposed construction has the potential to disturb or destroy historic properties, the purpose of this aspect of the research was to: (1) collect reconnaissance-level architectural survey data for each building older than 50 years of age located within the Area of Potential Effect; (2) apply the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]) to each recorded resource to identify potential historic properties; and, (3) apply the Advisory Council on Historic Preservation's Criteria of Effect to each historic property to anticipate the effects of each undertaking. No historic

period standing structures were identified within or immediately adjacent to the proposed project area.

Curation

Following acceptance of the final report, records, photographs, and field notes will be curated with:

State of Louisiana,
Department Culture, Recreation, & Tourism
Office of Cultural Development,
Division of Archaeology
Capitol Annex Building
1051 N. 3rd Street, Room 405
Baton Rouge, LA 70802
(504) 342-8170

CHAPTER VII

RESULTS OF THE FIELD INVESTIGATIONS

Introduction

During the Phase I cultural resources inventory of the proposed Schooner Bayou Bankline Stabilization Project Area in Vermilion Parish, Louisiana, the proposed Area of Potential Effect was divided into three arbitrary segments to facilitate control during the survey process. These segments originated and subsequently terminated at recognizable natural and/or cultural features, e.g., at an extant canal. Because it was unclear from the project map as to where the 1.6 km (1 mi) project item originated, an extra 0.34 km (0.34 miles) was examined to insure complete coverage of the Area of Potential Effect (Figure 13). Fieldwork consisted of boat survey, i.e., a visual examination of the existing bankline and pedestrian reconnaissance augmented by the systematic excavation of shovel tests at 25 m (82 ft) intervals along a single survey transect oriented along the eastern bank of North Prong. Where possible, auger tests were excavated at the base of the shovel tests to extend the subsurface testing to depths of 2 m (6.56 ft) or more.

During survey, 89 of 90 planned shovel tests were excavated successfully within the Area of Potential Effect. A single shovel test was not excavated since it fell in an area covered by standing water. No cultural resources were identified as a result of this undertaking. The following discussion describes the results of the Phase I cultural resources survey and archeological inventory of the proposed Schooner Bayou Bankline Stabilization Project Area.

Survey Segments

This section presents the results of the initial cultural resources survey and archeological

inventory. It describes the location of each survey segment, the numbers of shovel tests excavated, and it provides examples of shovel test profiles typical of various portions of the project corridor. Each of the survey segments consisted of a combination of level floodplain and natural levee deposits. Vegetation varies by landform; bamboo, marsh grass and cypress trees are consistent with floodplain soils, while live oak and mixed hardwoods occur along the natural levee. Several scatters of modern debris, including bottles and cans, are present throughout the project corridor.

Segment 1

Segment 1 originated approximately 200 m (656 ft) northeast of the mouth of North Prong at its intersection with Schooner Bayou (Figure 14). This segment, located within Section 4, of Township 15S, Range 2E, extended for a dis-



Figure 14. An overview of Segment 1 facing northeast.

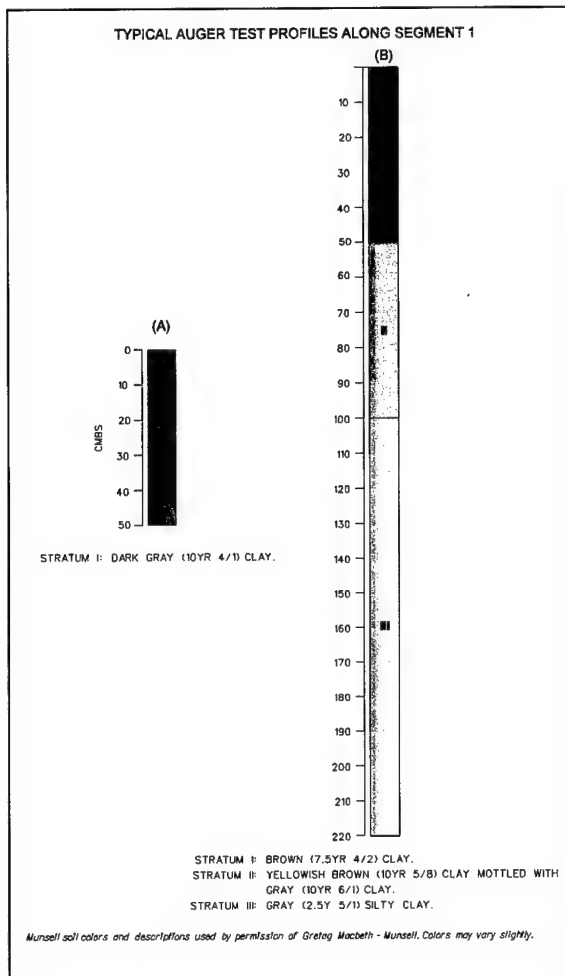


Figure 15. Typical soil profiles for floodplain (a) and natural level landforms (b) within Segment 1.

distance of 940 m (3,084 ft). During survey, 38 of 38 (100 percent) planned shovel tests were excavated successfully throughout the length of this survey segment. Differing soil profiles were recorded for the floodplain and natural levee deposits found throughout Segment 1. A typical soil profile within the floodplain landform exhibited only one stratum in profile (Figure 15). Stratum I was characterized as a layer of 10YR 4/1 dark gray clay that typically extended from 0 to 50 cmbs (0 to 19.7 inbs). The floodplain landform can be characterized as a floating rootmass with some surficial soil accumulation. The water table typically was encountered at a depth of 40 cmbs



Figure 16. An overview of Segment 2 facing northeast.

(15.7 inbs). Although the excavated auger tests extended to an approximate depth of 2 m (6.6 ft) below surface, little to no soil was recovered below the water table. The natural levee deposits generally contained three strata in profile. Stratum I, a layer of 7.5YR 4/2 brown clay, extended from the surface to 50 cmbs (0 to 19.7 inbs). Stratum II continued from 50 to 100 cmbs (19. to 39.4 inbs); it was characterized as a deposit of 10YR 5/8 yellowish brown clay mottled with 10 YR 6/1 gray clay. Stratum II was underlain by Stratum III, a layer of 2.5Y 5/1 gray silty clay that reached from 100 to a maximum excavated depth of 220 cmbs (39.4 to 78.7 inbs) (Figure 15).

Segment 2

Segment 2, located in Section 4 of Township 15S, Range 2E, originated approximately 1.14 km (0.7 mi) north-northeast of the mouth of North Prong at its intersection with Schooner Bayou, and it extended for 575 m (1,886.5 ft) in a northerly direction (Figure 16). During the Phase I cultural resources survey and archeological inventory of Segment 2, a total of 23 planned shovel were excavated successfully within this portion of the Area of Potential Effect. Soil profiles were recorded for both the natural levee and flood plain setting. A typical soil profile for auger tests excavated within the floodplain exhibited only a single stratum in profile (Figure 17). Stratum I was characterized as a layer of 10YR 4/1 dark gray clay that extended from 0 to 50 cmbs (0 to 19.7 inbs). The water table generally was en-

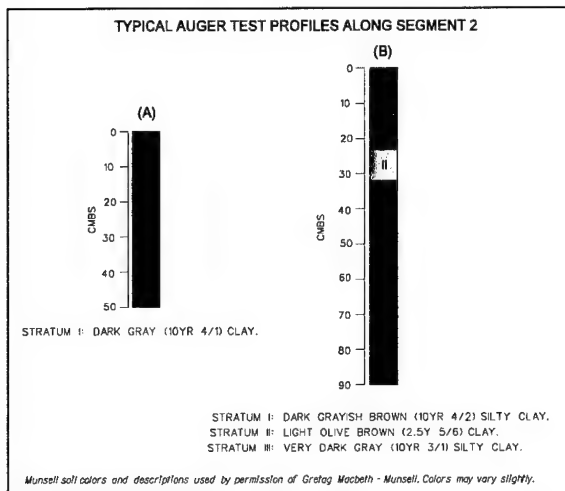


Figure 17. Typical soil profiles for floodplain (a) and natural level landforms (b) within Segment 2.

countered at a depth of 40 cmbs (15.7 inbs), and although the excavated auger test extended to a depth of 2 m (6.6 ft) below surface, little to no soil was found beneath the water table. Auger tests excavated along the banks of the natural levee displayed three strata in profile. Stratum I was described as a layer of 10YR 4/2 dark grayish brown silty clay that extended from 0 to 23 cmbs (0 to 9 inbs). It was underlain by Stratum II, a layer of 2.5Y 5/6 light olive brown clay that extended from 23 to 32 cmbs (9 to 12.6 inbs). Stratum III was characterized as a layer of 10YR 3/1 very dark gray silty clay; it ranged from 32 to 90 cmbs (12.6 to 35.4 inbs). The water table typically was encountered at a depth of 90 cmbs (35.4 inbs). Although the auger test extended to a depth of 2 m (6.6 ft) below surface, little to no soil was recovered below 90 cmbs (35.4 inbs) (Figure 17).

Segment 3

Segment 3 extended through portions of Section 4 of Township 15S, Range 2E and Section 33 of Township 14S, Range 2E. This segment originated at a small drainage canal, approximately 1.7 km (1.1 mi) north-northeast of the mouth of North Prong, and it continued in a northerly direction for 720 m (2,362.2 ft) (Figure



Figure 18. An overview of Segment 3 facing east.

18). During survey, 28 of 29 shovel tests were excavated successfully during the cultural resources investigation of survey Segment 3. A single shovel test could not be excavated because it was located in an area covered by standing water or impacted by the construction of an extant drainage canal. Soil profiles were recorded for both the natural levee and floodplain deposits identified during survey. An auger test excavated within the floodplain exhibited only a single stratum in profile (Figure 19); Stratum I consisted of a layer of 10YR 4/1 dark gray clay that extended from 0 to 50 cmbs (0 to 19.7 inbs); the water table generally was encountered at a depth of 40 cmbs (15.7 inbs). Although each of the auger tests extended to a depth of 2 m (6.6 ft) below surface, little to no soil was encountered. The second profile type, located within the natural levee deposits, exhibited three strata in profile. Stratum I consisted of a deposit of 7.5YR 4/2 brown clay that extended from 0 to 50 cmbs (0 to 19.7 inbs). Stratum II continued from 50 to 65 cmbs (19.7 to 25.6 inbs), and it was characterized as a layer of 10YR 5/8 yellowish brown clay mottled with 10 YR 6/1 gray clay. Stratum III, a layer of 10 YR 3/1 very dark gray clay, extended from the base of Stratum II to 100 cmbs (39.4 inbs). Although these auger tests extended to depths of 2 m (6.6 ft) or more, little to no soil was encountered below the water table, i.e., below 1.1 mbs (3.6 ftbs) (Figure 19).

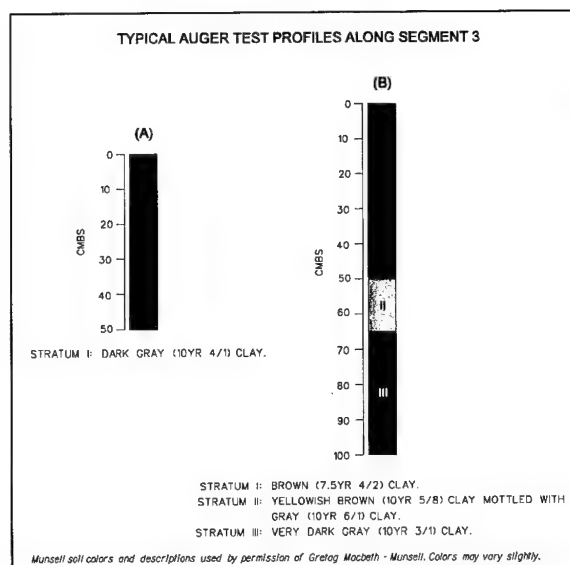


Figure 19. Typical soil profiles for floodplain (a) and natural level landforms (b) within Segment 3.

Summary and Management Recommendations

Despite the implementation of intensive visual reconnaissance augmented by systematic shovel testing and auger testing throughout the Area of Potential Effect, no cultural resources were identified within this moderate to low probability corridor. No additional testing of the Schooner Bayou project corridor is recommended.

CHAPTER VIII

SUMMARY AND MANAGEMENT RECOMMENDATIONS

A Phase I cultural resources survey and historical inventory of the proposed bankline stabilization project in the vicinity of the Schooner Bayou Control Structure, Mermentau River, Vermilion Parish, Louisiana, was undertaken in January of 2000 by R. Christopher Goodwin & Associates, Inc., on behalf of the U.S. Army Corps of Engineers, New Orleans District. Fieldwork included pedestrian survey augmented by systematic shovel testing and auger testing throughout the proposed project area. Shovel testing was conducted at 25 m (82 ft) intervals along a single linear transect placed along the eastern bank of the North Prong. The survey corridor measured approximately 2.1 km

(1.3 mi) in length and 30 m (98.4 ft) in width. Fieldwork also included an architectural survey to identify and record any standing structures older than 50 years in age situated within the limits of the proposed project area.

No cultural resources loci were identified as a result of this investigation. In addition, no historic period standing structures, i.e., those 50 years in age or older, were identified during survey. In summary, no significant or potentially significant cultural resources were identified within the limits of the proposed project corridor. No additional testing of the Mississippi portion of the proposed Schooner Bayou Bankline Stabilization Project Area is recommended.

BIBLIOGRAPHY

Autin, Whitney J.

- 1984 Geologic Significance of Land Subsidence at Jefferson Island, Louisiana. *Transactions Gulf Coast Association of Geological Societies* 34:293-309.

Autin, Whitney J., Scott F. Burns, Bobby J. Miller, Roger T. Saucier, and John I. Snead

- 1991 Quaternary Geology of the Lower Mississippi River Valley. In *Quaternary Nonglacial Geology, Conterminous U.S.*, edited by R. B. Morrison, pp. 20-56. The Geology of North America, vol. K-2. Geological Society of America, Boulder, Colorado.

Beavers, Richard C., Malcolm C. Webb, Teresia R. Lamb, and John R. Greene

- 1984 *Preliminary Archaeological Survey of the Lower West Pearl River, Saint Tammany Parish, Louisiana*. Prepared for Department of the Interior, through the Department of Culture, Recreation, and Tourism, Office of Cultural Development, Division of Archaeology, Baton Rouge.

Bergerie, Maurine

- 1962 *They Tasted Bayou Water, A Brief History of Iberia Parish*. Pelican Publishing Company, New Orleans.

Bouchereau, Louis and Alcee Bouchereau

- 1868 - *Statement on the Sugar and Rice Crops Made in Louisiana*. Pelican Steam Book and Job
1917 Printing, New Orleans.

Bouchereau, Louis

- 1876- *Statement of the Sugar and Rice Crops Made in Louisiana (1868-1877)*. Pelican Steam
1898 Book and Job Printing, New Orleans.

Brain, Jeffrey P.

- 1971 *The Lower Mississippi Valley in North American Prehistory*. Arkansas Archaeological Survey, Fayetteville.

Brasseaux, Carl A.

- 1987 *The Founding of New Acadia: The Beginnings of Acadian Life in Louisiana, 1765-1803*. Louisiana State University Press, Baton Rouge.

Broussard, Beverly Bernard, and Raymond L. Broussard

- 1955 *A History of St. Mary Parish*. No publisher listed, Franklin, Louisiana.

Brown, Clair A.

- 1965 *Louisiana Trees and Shrubs*. Louisiana Forestry Commission Bulletin No. 1. Claitor's Publishing Division, Baton Rouge, Louisiana.
- 1972 *Wildflowers of Louisiana and Adjoining States*. Louisiana State University Press, Baton Rouge.

- Brown, Ian W.
1981 The Morgan Site: An Important Coles Creek Mound Complex on the Chenier Plain of Southwest Louisiana. *North American Archaeologist* 2(3):207-237.
- Brown, Ian W., and Nancy Lambert-Brown
1978 *Archaeological Investigations at the Banana Bayou Mound (33-I-5)*. Lower Mississippi Survey, Petite Anse Project Research Notes 5. Peabody Museum, Harvard University, Cambridge.
- Byrd, K.M.
1994 Tchefuncte Subsistence Practices at the Morton Shell Mound, Iberia Parish, Louisiana. *Louisiana Archaeology* 16:1-128. (For 1989)
- Campbell, J. L., J. R. Morehead, and A. F. Servello
1990 *Data Recovery at 16VN791: A Multi-Component Prehistoric Site in the Birds Creek Drainage, Fort Polk Military Reservation, Fort Polk, Louisiana*. Report of Investigations No. 188. New World Research, Inc.
- Chabreck, R.H. and R.E. Condrey
1979 *Common Vascular Plants of the Louisiana Marsh*. Sea Grant Publication No. LSU-T-79-003. Louisiana State University Center for Wetland Resources, Baton Rouge.
- Chambers, Henry E.
1898 West Florida and Its Relation to the Historical Cartography of the United States. In *Anglo-American Relations and Southern History*, pp. 2-59. Johns Hopkins University Studies in Historical and Political Science, vol. XVI, No. 5. The Johns Hopkins Press, Baltimore, Maryland.
- Champomier, P. A.
1844- Statement of the Sugar Crop Made in Louisiana. Cook, Young and Company, New Orleans, Louisiana.
1859
- Chapman, J., and A.B. Shea
1981 The Archaeobotanical Record: Early Archaic Period to Contact in the Lower Little Tennessee River Valley. *Tennessee Anthropologist* 6(1):61-84.
- Chisholm, John Wright
1952 *Economics of the Salt Industry in Louisiana*. Unpublished Ph.D. dissertation. Department of Economics, Louisiana State University and Agricultural and Mechanical College, Baton Rouge.
- Clune, John and Karla W. Wheeler
1991 *A Database of Louisiana Shipwrecks*. Database on file at the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Archaeology, Baton Rouge, Louisiana.
- Coleman, J.M., and S.M. Gagliano
1964 Cyclic Sedimentation in the Mississippi River Deltaic Plains. *Transactions of the Gulf Coast Association of Geological Societies* 14:67-40.

- Coleman, James M.
1966 Ecological Changes in a Massive Fresh-Water Clay Sequence. *Gulf Coast Association of Geological Societies Transactions* 16:159-174.
- Craft, B.R.
1984 Wildlife Habitat. In *Soil Survey of Lafourche Parish, Louisiana*, compiled by S.D. Matthew, pp. 39-42. United States Department of Agriculture, Soil Conservation Service, Washington, D.C.
- Davis, Dave D.
1984 Protohistoric Cultural Interaction along the Northern Gulf Coast. *Perspectives on Gulf Coast Prehistory*, University Presses of Florida, Gainesville.
- Davis, Edwin A.
1971 *Louisiana, A Narrative History*. 3rd ed. Claiborne's Publishing Division, Baton Rouge.
- De Grummond, Jewel Lynn Delaune
1949 A Social History of St. Mary Parish, 1845-1860. *Louisiana Historical Quarterly* 32:17-102.
- De Ville, Winston
1973 *Opelousas, The History of a French and Spanish Military Post in America, 1716 - 1803*. Polyanthos, Cottonport, Louisiana
- Degelos, Pierre A.
1892 Statement of Sugar Made in Louisiana in 1828 and 1829. *The Louisiana Planter and Sugar Manufacturer* IX(4):65-68.
- Edmonds, David C.
1979 *Yankee Autumn in Acadiana: A Narrative of the Great Texas Overland Expedition through Southwestern Louisiana, October-December 1863*. The Acadiana Press, Lafayette, Louisiana
- Fontenot, Mary Alice, and Paul B. Freeland
1976 *Acadia Parish, Louisiana: A History to 1900*. Claiborne's Publishing Division, Baton Rouge, Louisiana.
- Frazier, D. E.
1967 Recent Deltaic Deposits of the Mississippi River: Their Development and Chronology. *Transactions of the Gulf Coast Association of Geological Societies* 17:287-315.
- Frazier, D.E., and A. Osanik
1965 *Recent Peat Deposits-Louisiana Coastal Plain*. In *Environments of Coal Deposition*, edited by E.C. Dapples and M.E. Hopkins, pp. 63-85. Special Paper 114, Geological Society of America, Boulder, Colorado.
- French, Benjamin Franklin (editor and translator)
1875 *Historical Collections of Louisiana and Florida, Including Translations of Original Manuscripts Relating to Their Discovery and Settlement, with Numerous Historical and Biographical Notes*. Albert Mason, New York

Gagliano, Sherwood M.

1964 *An Archaeological Survey of Avery Island*. Coastal Studies Institute, Louisiana State University, Baton Rouge.

1979 *Cultural Resources Studies in the Pearl River Mouth Area, Louisiana-Mississippi: Chef Menteur and Rigolets Passes Hurricane Control Structures Orleans and St. Tammany Parishes, Louisiana*. Report by Coastal Environments, Inc. for U.S. Army Corps of Engineers, New Orleans District.

Gagliano, Sherwood M.

1984 Geoarchaeology of the Northern Gulf Shore. In *Perspectives in Gulf Coast Prehistory*, edited by Dave D. Davis, pp. 1-40. University Press of Florida, Gainesville.

Gagliano, Sherwood M., Richard A. Weinstein, and Eileen K. Burden

1975 *Archeological Investigations Along the Gulf Intracoastal Waterway: Coastal Louisiana Area*. Coastal Environments, Inc., Baton Rouge, Louisiana. Submitted to the U.S. Army Corps of Engineers, New Orleans District, New Orleans, Louisiana.

Gibson, Dennis (editor)

1979 The Journal of John Landreth. *Attakapas Gazette* 14(3): 103-109.

Gibson, Jon L.

1976 *Archaeological Survey of Bayou Teche, Vermilion River and Freshwater Bayou, South Central Louisiana*. University of Southwestern Louisiana, Center for Archaeological Studies Report No. 2. Unpublished report on file at the Division of Archaeology and Historic Preservation, Department of Culture Recreation, and Tourism, Baton Rouge.

1979 Poverty Point Trade in South Central Louisiana: An Illustration from Beau Rivage. In *Louisiana Archaeology*, Vol. 4:91-116. (For 1977)

1984 The Troyville-Baytown Issue, The Troyville - Baytown Period in Lower Mississippi Valley Prehistory: A Memorial to Robert S. Neitzel. In *Louisiana Archaeology* 9:65-98 (For 1982).

Gibson, Jon L., and J. Richard Shenkel

1988 Louisiana Earthworks: Middle Woodland and Predecessors. In *Middle Woodland Ceremonialism in the Mid-South and Lower Mississippi Valley*. Proceedings of the 1984 Mid-South Archaeological Conference, pp. 7-18. Mississippi Department of Archives and History, Jackson.

Gibson, Jon L., Robert B. Gramling, Steven Brazda, Stephen Truax, Michael Nault, and Kathleen Mary Byrd

1978 *Archaeological Survey of the Lower Atchafalaya Region, South Central Louisiana*. University of Southwestern Louisiana Center for Archaeological Studies. Submitted to the U.S. Army Corps of Engineers, New Orleans District.

Goins, Charles R., and John M. Caldwell

1995 *Historical Atlas of Louisiana*. University of Oklahoma Press, Norman.

- Goodspeed, Weston A. (compiler)
 1892 *Biographical and Historical Memoirs of Louisiana*, vol. 2. Goodspeed Publishing Company, Chicago.
- Goodwin, R. Christopher, James M. Wojtala, Thomas L. Tuohy, Marian D. Roberts, and E. Jeanne Harris
 1988 *Phase II Archeological Testing and Evaluation of Seven Sites in the Logansport Loop Pipeline Right-of-Way, Jackson, Lincoln, Ouachita, and Union Parishes, Louisiana*. Submitted by R. Christopher Goodwin & Associates, Inc., to Southern Natural Gas Company, Birmingham, Alabama.
- Goodwin, R. Christopher, Stephen Hinks, William P. Athens, Lawrence L. Hewitt, and William A. Morgan
 1990 *Literature Search and Research Design, Amite River and Tributaries Project, Ascension, East Baton Rouge, and Livingston Parishes, Louisiana*. Submitted by R. Christopher Goodwin & Associates, Inc., to the U.S. Army Corps of Engineers, New Orleans District.
- Gosselink, J.G.
 1984 *The Ecology of Delta Marshes of Coastal Louisiana*. Performed by Center for Wetland Resources, Louisiana State University, Baton Rouge. Performed for Nation Coastal Ecosystems Team, Division of Biological Service, Research, and Development, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C.
- Green, James A., Jr.
 1991 Calcasieu Point: A Formal Description. *Central States Archaeological Journal*. Central States Archaeological Societies, Inc., Kirkwood, Missouri.
- Griffin, Harry Lewis
 1959 *The Attakapas Country: A History of Lafayette Parish, Louisiana*. Pelican Publishing Company. New Orleans, Louisiana.
- Griffin, J. B.
 1990 Comments on the Late Prehistoric Societies in the Southeast. In *Towns and Temples Along the Mississippi*, p. 5-15, edited by D. H. Dye and C. A. Cox. University of Alabama Press, Tuscaloosa.
- Hallowell, Christopher
 1979 *People of the Bayou: Cajun Life in Lost America*. E. P. Dutton, New York.
- Hansen, Harry (editor)
 1971 *Louisiana, A Guide to the State*. Revised ed. Hastings House, New York. Originally published 1941, Louisiana Library Commission at Baton Rouge.
- Harrar, Ellwood S., and J. George Harrar
 1962 *Guide to Southern Trees*. Second Edition. Dover Publications, Inc., New York.
- Haynes, C. V., Jr.
 1991 Geoarchaeological and Paleohydrological Evidence for a Clovis Age Drought in North America and its Bearing on Extinction. *Quaternary Research* 35:438-450.
- Hudson, Charles
 1978 *The Southeastern Indians*. University of Tennessee Press.

- Hutchins, Thomas
1784 *An Historical Narrative and Topographical Description of Louisiana and West Florida*. Philadelphia, Pennsylvania.
- Iberia Parish Development Board
1948 Iberia Parish Resources and Facilities. Published in cooperation with the Department of Public Works, Planning Division. Baton Rouge, Louisiana.
- Iberia Parish Library
n.d. Unidentified excerpt from text on Louisiana wildlife refuges. Excerpt on file, La. – Marsh Island Vertical File, Iberia Parish Library, New Iberia, Louisiana.
- Jackson, H. E.
1991 Bottomland Resources and Exploitation Strategies During the Poverty Point Period. *The Poverty Point Culture*. Edited by K. M. Byrd, pp. 131-157. Geoscience and Man, Vol. 29. Louisiana State University, Baton Rouge.
- Jenkins, Ned J.
1979 Miller Hopewell of the Tombigbee Drainage. In *Hopewell Archaeology: The Chillicothe Conference*, edited by David S. Brose and N'omi Greber, pp. 171-180. Kent State University Press, Kent, Ohio.
- Jeter, Marvin D., Jerome C. Rose, G. Ishmael Williams, Jr., and Anna M. Harmon
1989 *Archeology and Bioarcheology of the Lower Mississippi Valley and Trans-Mississippi South in Arkansas and Louisiana*. Arkansas Archeological Survey Research Series No. 37. Submitted to the U.S. Army Corps of Engineers, Southwestern Division Study Unit 6 of the Southwestern Division Archeological Overview. Contract No. DACW63-84-C-0149.
- Jones, Allen W.
1961 Military Events in Louisiana During the Civil War, 1861-1865. *Louisiana History*
- Kidder, Tristram R.
1988 *Protohistoric and Early Historic Cultural Dynamics in Southeast Arkansas and Northeast Louisiana, A.D. 1542-1730*. Print in 1995 by U.M.I. Dissertation Information Service, Ann Arbor, Michigan.
- Kniffen, Fred B., and Sam Bowers Hilliard
1988 *Louisiana: Its Land and People*. Revised edition. Louisiana State University Press, Baton Rouge.
- Kniffen, Fred B., Hiram F. Gregory, and George A. Stokes
1987 *The Historic Indian Tribes of Louisiana, From 1542 to the Present*. Louisiana State University Press, Baton Rouge.
- Knight, Vernon J., Jr.
1984 Late Prehistoric Adaptation in the Mobile Bay Region. *Perspectives on Gulf Coast Prehistory*, University Presses of Florida, Gainesville.

- Kolb, Charles R., and Jack R. Van Lopik
1958 *Geology of the Mississippi River Deltaic Plain, Southeastern Louisiana*. U.S. Army Corps of Engineer Waterways Experimental Station Technical Report 3-483, U.S. Army Corps of Engineers Waterways Experimental Station, Vicksburg, Mississippi.
- Largent, F. B., M. R. Waters, and D. L. Carlson
1991 The Spatiotemporal Distribution and Characteristics of Folsom Projectile Points in Texas. *Plains Anthropologist* 36(137):323-341. Plains Anthropological Society.
- Larson, Lewis H., Jr.
1980 *Aboriginal Subsistence Technology on the Southeastern Coastal Plain during the Late Prehistoric Period*. The University Presses of Florida, Gainesville.
- Lentz, David L.
1986 Archaeobotanical Remains from the Hester Site: The Late Paleo-Indian and Early Archaic Horizons. *Midcontinental Journal of Archaeology* 11(2):269-279.
- Lonn, Ella
1933 *Salt as a Factor in the Confederacy*. Walter Neale, New York.
- Louisiana Department of Wildlife and Fisheries
1997 *Animals of Special Concern - Louisiana Natural Heritage Program*. Baton Rouge.
- Louisiana Editors Association
1936 *South Louisiana and the Beautiful Gulf Coast*. Louisiana Editors Association, New Orleans.
- Lowery, G. H.
1974 *The Mammals of Louisiana and Its Adjacent Waters*. Louisiana State University Press, Baton Rouge.
- Lowrie, Walter and Walter S. Franklin (editors)
1834 *American State Papers, Class VIII, Public Lands*. Gales and Seaton, Washington, D.C.
- Martin, Paulette Guilbert, Translator
1976 The Kelly-Nugent Report on the Inhabitants and Livestock in the Attakapas, Natchitoches, Opelousas, and Rapide Posts, 1770. *Attakapas Gazette* 11 (4):187-192.
- McClane, A. J. (editor)
1974 *McClane's New Standard Fishing Encyclopedia and International Angling Guide*. Revised Second Edition. Holt, Rinehart, and Winston, Inc., Canada.
- Meek, A.J. and Jo Gullede
1986 *Red Pepper Paradise, Avery Island, Louisiana*. Audubon Park Press, New Orleans.
- Menn, Joseph Karl
1964 *The Large Slaveholders of Louisiana - 1860*. Pelican Publishing Company, New Orleans.
- Muller, Jon
1983 The Southeast. In *Ancient North Americans*, edited by Jesse D. Jennings, pp. 373-420, W. H. Freeman and Company, San Francisco.

- Murphy, Kenneth and Ralph Libersat
1996 *Soil Survey of Vermilion Parish, Louisiana*. United States Department of Agriculture, Natural Resources Conservation Service.
- Murphy, Kenneth and Ralph Libersat
1996 *Soil Survey of Vermilion Parish, Louisiana*. United States Department of Agriculture, Natural Resources Conservation Service.
- Murray, G.E.
1961 *Geology of the Atlantic and Gulf Coastal Province of North America*. Harper & Brothers, New York.
- National Park Service
1995 *National Register Bulletin 24: Guidelines for Local Surveys: A Basis for Preservation Planning*.
- Neuman, Robert W.
1975 *Archaeological Survey of the Vermilion Lock Replacement, Louisiana*. Report on file at the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Archaeology, Baton Rouge, Louisiana.

1984 *An Introduction to Louisiana Archaeology*. Louisiana State University Press, Baton Rouge.
- Parmalee, P. W.
1962 Faunal Remains from the Stanfield-Worley Bluff Shelter. In *Journal of Alabama Archaeology* 8:112-114.
- Parmalee, P. W., R. B. McMillian, and F. B. King
1976 Changing Subsistence Patterns at the Rogers Shelter. In *Prehistoric Man and His Environments: A Case Study in the Ozark Highlands*, edited by W.R. Wood and R.B. McMillian. pp. 141-62. Academic Press, New York.
- Pearson, Charles E.
1986 Dating the Course of the Lower Red River in Louisiana: the Archaeological Evidence. *Geoarchaeology* 1:39-43.
- Penland, S., J.R. Suter, R.A. McBride, and R. Boyd
1991 New Depositional Model for the Mississippi River Delta Plain. *American Association of Petroleum Geologists* 75:15-34.
- Perino, Gregory
1985 *Selected Preforms, Points and Knives of the North American Indians*. Volume 1. Points & Barbs Press, Idabel, Oklahoma.
- Perrault, S. L., and R. A. Weinstein
1994 *National Register Eligibility Testing at the Sarah Peralta Site, East Baton Rouge Parish, Louisiana*. Prepared for the Division of Archaeology, Office of Cultural Development, Louisiana Department of Culture, Recreation and Tourism, Coastal Environments, Inc., Baton Rouge.

- Phillips, Philip
1970 *Archaeological Survey of the Lower Yazoo Basin, Mississippi, 1949-1955*. Papers of the Peabody Museum of Archaeology and Ethnology Vol. 60. Harvard University, Cambridge.
- Pittman, Philip
1973 *The Present State of the European Settlements on the Mississippi*. Facsimile reproduction. University of Florida Press, Gainesville. Originally published 1770, J. Nourse, London.
- Pourciaux, Betty (editor and compiler)
1985 *St. Martin Parish History*. Comite des Archives de la Louisiane, Baton Rouge.
- Prichard, Walter, Fred B. Kniffen, and Clair A. Brown (editors)
1945 Southern Louisiana and Southern Alabama in 1819: The Journal of James Leander Cathcart. *Louisiana Historical Quarterly* 23(3):735-921.
- Raphael, Morris
1976 *The Battle in the Bayou Country*. 2nd printing. Harlo Press, Detroit, Michigan.
- Rees, Grover
1965 *A Narrative History of Breaux Bridge, Once Called "La Pointe"*. Attakapas Historical Association. St. Martinville, Louisiana.
- Reese, W.D.
1992 *Acadiana Flora*. Center for Louisiana Studies, Lafayette, Louisiana.
- Roland, Charles P.
1957 *Louisiana Sugar Plantations during the Civil War*. E. J. Brill, Leiden, The Netherlands.
- Saucier, Roger T.
1977 *The Northern Gulf Coast during the Farmdalian Substage: A Search for the Evidence*. U.S. Army Corps of Engineers Waterways Experimental Station Miscellaneous Paper Y-77-1. U.S. Army Corps of Engineers Waterways Experimental Station, Vicksburg.

1981 Current Thinking on Riverine Processes and Geologic History as Related to Human Settlement in the Southeast. In *Geoscience and Man* 20:7-18. *Traces of Prehistory: Papers in Honor of William G. Haag*, edited by F. H. West and R. W. Neuman.

1994 *Geomorphology and Quaternary Geologic History of the Lower Mississippi Valley*. Prepared for the President of the Mississippi River Commission by the U.S. Army Corps of Engineer Waterways Experiment Station. Volumes I and II.
- Schweid, Richard
1980 *Hot Peppers, Cajuns and Capsicum in New Iberia, Louisiana*. Madrona Publishers, Seattle.
- Shenkel, J. Richard
1981 Pontchartrain Tchefuncte Site Differentiation. *Louisiana Archaeology* 8:21-36.

- Sibley, John
1806 *An Account of Louisiana at the Time of Its Transfer to the United States. In Message from the President of the United States, Communicating Discoveries Made in Exploring the Mississippi River, Red River, and Washita, by Captains Lewis and Clark, Doctor Sibley, and Mr. Dunbar . . .*, pp. 67-97. Hopkins and Seymour, New York.
- Sitterson, J. Carlyle
1953 *Sugar Country: The Cane Sugar Industry in the South*. The University of Kentucky Press, Lexington.
- Smith, L. M., J. B. Dunbar, and L. D. Britsch
1986 *Geomorphological Investigation of the Atchafalaya Basin, Area West, Atchafalaya Delta, and Terrebonne Marsh*. Technical Report GL-86-3. Department of the Army, U.S. Army Engineer District, New Orleans.
- Smith, Marvin T.
1977 The Early Historic Period (1540-1670) on the Upper Coosa River Drainage of Alabama and Georgia. *The Conference on Historic Site Archaeology Papers 1976*. 11:151-67.
- Smith, Steven D., Philip G. Rivet, Kathleen M. Byrd, and Nancy C. Hawkins
1983 *Louisiana's Comprehensive Archaeological Plan*. State of Louisiana, Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Archaeology, Baton Rouge.
- Southern Pacific
1904 *Louisiana Rice Book*. Revised 8th edition. Houston, Texas.
- Speaker, John Stuart, Joanna Chase, Carol Poplin, Herschel Franks, and R. Christopher Goodwin
1986 *Archeological Assessment of the Barataria Unit, Jean Lafitte National Historical Park*. Submitted to the National Park Service, Southwest Region, Santa Fe, by R. Christopher Goodwin & Associates, Inc.
- Steponaitis, Vincas P.
1983 *Ceramics, Chronology, and Community Patterns, an Archaeological Study at Moundville*. Studies in Archaeology, Stuart Struever, consulting editor. Academic Press, New York.
- Story, D. A., J. A. Guy, B. A. Burnett, M. D. Freeman, J. C. Rose, D. G. Steele, B. W. Olive, and K. J. Reinhard
1990 *The Archeology and Bioarcheology of the Gulf Coastal Plain: Volume 1*. Arkansas Archeological Survey Research Series No. 38.
- Swanton, John R.
1946 *The Indians of the Southeastern United States*. Bureau of American Ethnology Bulletin 137.

1953 *The Indian Tribes of North America*. Bureau of American Ethnology, Bulletin 145, Washington, D.C.

Toth, Alan

- 1988 Early Marksville Phases in the Lower Mississippi Valley: A Study of Culture Contact Dynamics. Mississippi Department of Archives and History Archaeological Report 21. Jackson.

Treffinger, Jeffrey

- 1988 *Evaluation of the National Register Eligibility of the Vermilion Lock, Vermilion Parish, Louisiana*. Museum of Geoscience, Louisiana State University, Baton Rouge, Louisiana. Submitted to the U.S. Army Corps of Engineers, New Orleans District, New Orleans, Louisiana.

United States Bureau of the Census

- 1990 *General Population Statistics*. Table 76: General Characteristics of Persons, Households, and Families. Government Documents Division, Howard-Tilton Library, Tulane University, New Orleans, Louisiana.

U.S. Secretary of War [OR]

- 1886- *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*, vols. XV, XXVI(1), XXXIV(1, 2, 4), XLI(2, 4), and XLVIII(1, 2). Government Printing Office, Washington, D.C.

Vermilion Historical Society

- 1983 *History of Vermilion Parish, Louisiana*. Vermilion Historical Society, Abbeville, Louisiana.

Voorhies, Jacqueline K.

- 1973 *Some Late Eighteenth-Century Louisianians: Census Records 1758-1796*. The USL History Series, University of Southwestern Louisiana, Lafayette.

Wall, Bennett H., Charles Edwards O'Neill, Joe Grey Taylor, William Ivy Hair, Mark T. Carleton, and Michael L. Kurtz

- 1984 *Louisiana: A History*. The Forum Press. Arlington Heights, Illinois.

Walthall, John A.

- 1980 *Prehistoric Indians of the Southeast: Archaeology of Alabama and the Middle South*. The University of Alabama Press, Tuscaloosa.

Webb, Clarence H.

- 1982 *Poverty Point Culture*. 2nd ed., revised. *Geoscience and Man* 17.

Weinstein, Richard A., and D. B. Kelley

- 1989 *Cultural Resource Investigations Related to the Terrebonne Marsh Backwater Complex, Terrebonne, St. Mary, and Assumption Parishes, Louisiana*. 2 vols. Submitted to the U.S. Army Corps of Engineers, New Orleans District, Contract No. DACW 2986D0092, by Coastal Environments, Inc.
- 1992 *Cultural Resources Investigation in the Terrebonne Marsh, South-Central Louisiana*. Submitted to the U.S. Army Corps of Engineers, New Orleans District by Coastal Environments, Inc.

Weinstein, Richard A., and Sherwood M. Gagliano

- 1985 The Shifting Deltaic Coast of the Lafourche Country and Its Prehistoric Settlement. In *The Lafourche Country: The People and Its Prehistoric Settlement*, edited by P. D. Uzee, pp. 122-148. Center for Louisiana Studies, University of Southwestern Louisiana, Lafayette.

Weinstein, Richard and David B. Kelley

- 1989 *Cultural Resource Investigations Related to the Terrebonne Marsh Backwater Complex, Terrebonne, St. Mary, and Assumption Parishes, Louisiana*. 2 vols. Submitted to the U.S. Army Corps of Engineers, New Orleans District, Contract No. DACW 2986D0092, by Coastal Environments, Inc.

Wilds, John, Charles L. Defour, Walter G. Cowan

- 1991 *Louisiana: Yesterday and Today*. Louisiana State University Press, Baton Rouge.

Wiley, Gordon R., and Phillip Phillips

- 1958 *Method and Theory in American Archaeology*. The University of Chicago Press, Chicago.

Williams, Stephen, and Jeffrey P. Brain

- 1983 *Excavations at the Lake George Site, Yazoo County, Mississippi, 1958-1960*. Papers of the Peabody Museum of Archaeology and Ethnology Vol. 74. Harvard University, Cambridge.

Winters, John D.

- 1963 *The Civil War in Louisiana*. Louisiana State University Press, Baton Rouge.